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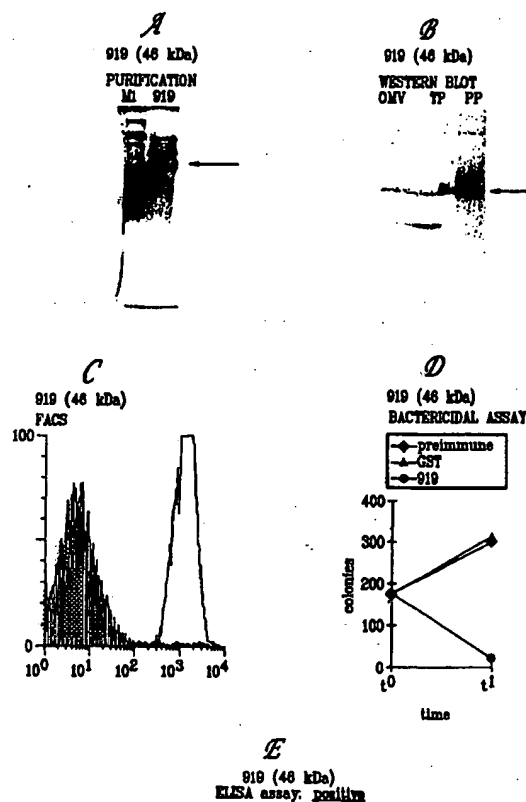
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(57) Abstract

The invention provides methods of obtaining immunogenic proteins from genomic sequences including *Neisseria*, including the amino acid sequences and the corresponding nucleotide sequences, as well as the genomic sequence of *Neisseria meningitidis B*. The proteins so obtained are useful antigens for vaccines, immunogenic compositions, and/or diagnostics.



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NEISSERIA GENOMIC SEQUENCES AND METHODS OF THEIR USE

This application claims priority to provisional U.S. applications serial nos. 60/103,794, filed 9 October, 1998 and 60/132,068, filed 30 April, 1999, both of which are
5 incorporated in full herein by reference.

This invention relates to methods of obtaining antigens and immunogens, the antigens and immunogens so obtained, and nucleic acids from the bacterial species: *Neisseria meningitidis*. In particular, it relates to genomic sequences from the bacterium; more particularly its "B" serogroup.

10

BACKGROUND

Neisseria meningitidis is a non-motile, gram negative diplococcus human pathogen. It colonizes the pharynx, causing meningitis and, occasionally, septicaemia in the absence of meningitis. It is closely related to *N. gonorrhoea*, although one feature that clearly
15 differentiates meningococcus from gonococcus is the presence of a polysaccharide capsule that is present in all pathogenic meningococci.

N. meningitidis causes both endemic and epidemic disease. In the United States the attack rate is 0.6-1 per 100,000 persons per year, and it can be much greater during outbreaks. (see Lieberman *et al.* (1996) Safety and Immunogenicity of a Serogroups A/C *Neisseria meningitidis* Oligosaccharide-Protein Conjugate Vaccine in Young Children. *JAMA* 275(19):1499-1503; Schuchat *et al* (1997) Bacterial Meningitis in the United States in 1995. *N Engl J Med* 337(14):970-976). In developing countries, endemic disease rates are much
20 higher and during epidemics incidence rates can reach 500 cases per 100,000 persons per year. Mortality is extremely high, at 10-20% in the United States, and much higher in
25 developing countries. Following the introduction of the conjugate vaccine against *Haemophilus influenzae*, *N. meningitidis* is the major cause of bacterial meningitis at all ages in the United States (Schuchat *et al* (1997) *supra*).

Based on the organism's capsular polysaccharide, 12 serogroups of *N. meningitidis* have been identified. Group A is the pathogen most often implicated in epidemic disease in
30 sub-Saharan Africa. Serogroups B and C are responsible for the vast majority of cases in the United States and in most developed countries. Serogroups W135 and Y are responsible for

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the rest of the cases in the United States and developed countries. The meningococcal vaccine currently in use is a tetravalent polysaccharide vaccine composed of serogroups A, C, Y and W135. Although efficacious in adolescents and adults, it induces a poor immune response and short duration of protection, and cannot be used in infants (e.g., Morbidity and Mortality weekly report, Vol. 46, No. RR-5 (1997)). This is because polysaccharides are T-cell independent antigens that induce a weak immune response that cannot be boosted by repeated immunization. Following the success of the vaccination against *H. influenzae*, conjugate vaccines against serogroups A and C have been developed and are at the final stage of clinical testing (Zollinger WD "New and Improved Vaccines Against Meningococcal Disease". In: *New Generation Vaccines*, supra, pp. 469-488; Lieberman *et al* (1996) *supra*; Costantino *et al* (1992) Development and phase I clinical testing of a conjugate vaccine against meningococcus A (menA) and C (menC) (*Vaccine* 10:691-698)).

Meningococcus B (MenB) remains a problem, however. This serotype currently is responsible for approximately 50% of total meningitis in the United States, Europe, and South America. The polysaccharide approach cannot be used because the MenB capsular polysaccharide is a polymer of $\alpha(2-8)$ -linked *N*-acetyl neuraminic acid that is also present in mammalian tissue. This results in tolerance to the antigen; indeed, if an immune response were elicited, it would be anti-self, and therefore undesirable. In order to avoid induction of autoimmunity and to induce a protective immune response, the capsular polysaccharide has, for instance, been chemically modified substituting the *N*-acetyl groups with *N*-propionyl groups, leaving the specific antigenicity unaltered (Romero & Outschoorn (1994) Current status of Meningococcal group B vaccine candidates: capsular or non-capsular? *Clin Microbiol Rev* 7(4):559-575).

Alternative approaches to MenB vaccines have used complex mixtures of outer membrane proteins (OMPs), containing either the OMPs alone, or OMPs enriched in porins, or deleted of the class 4 OMPs that are believed to induce antibodies that block bactericidal activity. This approach produces vaccines that are not well characterized. They are able to protect against the homologous strain, but are not effective at large where there are many antigenic variants of the outer membrane proteins. To overcome the antigenic variability, multivalent vaccines containing up to nine different porins have been constructed (e.g., Poolman JT (1992) Development of a meningococcal vaccine. *Infect. Agents Dis.* 4:13-28).

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Additional proteins to be used in outer membrane vaccines have been the opa and opc proteins, but none of these approaches have been able to overcome the antigenic variability (e.g., Ala'Aldeen & Borriello (1996) The meningococcal transferrin-binding proteins 1 and 2 are both surface exposed and generate bactericidal antibodies capable of killing homologous and heterologous strains. *Vaccine* 14(1):49-53).

A certain amount of sequence data is available for meningococcal and gonococcal genes and proteins (e.g., EP-A-0467714, WO96/29412), but this is by no means complete. The provision of further sequences could provide an opportunity to identify secreted or surface-exposed proteins that are presumed targets for the immune system and which are not antigenically variable or at least are more antigenically conserved than other and more variable regions. Thus, those antigenic sequences that are more highly conserved are preferred sequences. Those sequences specific to *Neisseria meningitidis* or *Neisseria gonorrhoeae* that are more highly conserved are further preferred sequences. For instance, some of the identified proteins could be components of efficacious vaccines against meningococcus B, some could be components of vaccines against all meningococcal serotypes, and others could be components of vaccines against all pathogenic *Neisseriae*. The identification of sequences from the bacterium will also facilitate the production of biological probes, particularly organism-specific probes.

It is thus an object of the invention is to provide Neisserial DNA sequences which (1) encode proteins predicted and/or shown to be antigenic or immunogenic, (2) can be used as probes or amplification primers, and (3) can be analyzed by bioinformatics.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 illustrates the products of protein expression and purification of the predicted ORF 919 as cloned and expressed in *E. coli*.

Fig. 2 illustrates the products of protein expression and purification of the predicted ORF 279 as cloned and expressed in *E. coli*.

Fig. 3 illustrates the products of protein expression and purification of the predicted ORF 576-1 as cloned and expressed in *E. coli*.

Fig. 4 illustrates the products of protein expression and purification of the predicted ORF 519-1 as cloned and expressed in *E. coli*.

Fig. 5 illustrates the products of protein expression and purification of the predicted ORF 121-1 as cloned and expressed in *E. coli*.

Fig. 6 illustrates the products of protein expression and purification of the predicted ORF 128-1 as cloned and expressed in *E. coli*.

5 Fig. 7 illustrates the products of protein expression and purification of the predicted ORF 206 as cloned and expressed in *E. coli*.

Fig. 8 illustrates the products of protein expression and purification of the predicted ORF 287 as cloned and expressed in *E. coli*.

10 Fig. 9 illustrates the products of protein expression and purification of the predicted ORF 406 as cloned and expressed in *E. coli*.

Fig. 10 illustrates the hydrophilicity plot, antigenic index and AMPHI regions of the products of protein expression the predicted ORF 919 as cloned and expressed in *E. coli*.

Fig. 11 illustrates the hydrophilicity plot, antigenic index and AMPHI regions of the products of protein expression the predicted ORF 279 as cloned and expressed in *E. coli*.

15 Fig. 12 illustrates the hydrophilicity plot, antigenic index and AMPHI regions of the products of protein expression the predicted ORF 576-1 as cloned and expressed in *E. coli*.

Fig. 13 illustrates the hydrophilicity plot, antigenic index and AMPHI regions of the products of protein expression the predicted ORF 519-1 as cloned and expressed in *E. coli*.

20 Fig. 14 illustrates the hydrophilicity plot, antigenic index and AMPHI regions of the products of protein expression the predicted ORF 121-1 as cloned and expressed in *E. coli*.

Fig. 15 illustrates the hydrophilicity plot, antigenic index and AMPHI regions of the products of protein expression the predicted ORF 128-1 as cloned and expressed in *E. coli*.

Fig. 16 illustrates the hydrophilicity plot, antigenic index and AMPHI regions of the products of protein expression the predicted ORF 206 as cloned and expressed in *E. coli*.

25 Fig. 17 illustrates the hydrophilicity plot, antigenic index and AMPHI regions of the products of protein expression the predicted ORF 287 as cloned and expressed in *E. coli*.

Fig. 18 illustrates the hydrophilicity plot, antigenic index and AMPHI regions of the products of protein expression the predicted ORF 406 as cloned and expressed in *E. coli*.

THE INVENTION

The invention is based on the 961 nucleotide sequences from the genome of *N. meningitidis* shown as SEQ ID NOs:1-961 of Appendix C, and the full length genome of *N. meningitidis* shown as SEQ ID NO. 1068 in Appendix D. The 961 sequences in Appendix C represent substantially the whole genome of serotype B of *N. meningitidis* (>99.98%). There is partial overlap between some of the 961 contiguous sequences ("contigs") shown in the sequences in Appendix C, which overlap was used to construct the single full length sequence shown in SEQ ID NO. 1068 in Appendix D, using the TIGR Assembler [G.S. Sutton et al., *TIGR Assembler: A New Tool for Assembling Large Shotgun Sequencing Projects*, Genome Science and Technology, 1:9-19 (1995)]. Some of the nucleotides in the contigs had been previously released. (See [ftp://ftp.tigr.org/pub/data/n_meningitidis](http://ftp.tigr.org/pub/data/n_meningitidis) on the world-wide web or "WWW"). The coordinates of the 2508 released sequences in the present contigs are presented in Appendix A. These data include the contig number (or i.d.) as presented in the first column; the name of the sequence as found on WWW is in the second column; with the coordinates of the contigs in the third and fourth columns, respectively. The sequences of certain MenB ORFs presented in Appendix B feature in International Patent Application filed by Chiron SpA on October 9, 1998 (PCT/IB98/01665) and January 14, 1999 (PCT/IB99/00103) respectively.

In a first aspect, the invention provides nucleic acid including one or more of the *N. meningitidis* nucleotide sequences shown in SEQ ID NOs:1-961 and 1068 in Appendices C and E. It also provides nucleic acid comprising sequences having sequence identity to the nucleotide sequence disclosed herein. Depending on the particular sequence, the degree of sequence identity is preferably greater than 50% (e.g., 60%, 70%, 80%, 90%, 95%, 99% or more). These sequences include, for instance, mutants and allelic variants. The degree of sequence identity cited herein is determined across the length of the sequence determined by the Smith-Waterman homology search algorithm as implemented in MPSRCH program (Oxford Molecular) using an affine gap search with the following parameters: gap open penalty 12, gap extension penalty 1.

The invention also provides nucleic acid including a fragment of one or more of the nucleotide sequences set out herein. The fragment should comprise at least n consecutive nucleotides from the sequences and, depending on the particular sequence, n is 10 or more

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(e.g., 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 30, 35, 40, 45, 50, 60, 75, 100 or more). Preferably, the fragment is unique to the genome of *N. meningitidis*, that is to say it is not present in the genome of another organism. More preferably, the fragment is unique to the genome of strain B of *N. meningitidis*. The invention also provides nucleic acid that
5 hybridizes to those provided herein. Conditions for hybridizing are disclosed herein.

The invention also provides nucleic acid including sequences complementary to those described above (e.g., for antisense, for probes, or for amplification primers).

Nucleic acid according to the invention can, of course, be prepared in many ways (e.g., by chemical synthesis, from DNA libraries, from the organism itself, etc.) and can take
10 various forms (e.g., single-stranded, double-stranded, vectors, probes, primers, etc.). The term "nucleic acid" includes DNA and RNA, and also their analogs, such as those containing modified backbones, and also peptide nucleic acid (PNA) etc.

It will be appreciated that, as SEQ ID NOs:1-961 represent the substantially complete genome of the organism, with partial overlap, references to SEQ ID NOs:1-961 include
15 within their scope references to the complete genomic sequence, e.g., where two SEQ ID NOs overlap, the invention encompasses the single sequence which is formed by assembling the two overlapping sequences. Thus, for instance, a nucleotide sequence which bridges two SEQ ID NOs but is not present in its entirety in either SEQ ID NO is still within the scope of the invention. Additionally, such a sequence will be present in its entirety in the single full
20 length sequence of SEQ ID NO. 1068.

The invention also provides vectors including nucleotide sequences of the invention (e.g., expression vectors, sequencing vectors, cloning vectors, etc.) and host cells transformed with such vectors.

According to a further aspect, the invention provides a protein including an amino
25 acid sequence encoded within a *N. meningitidis* nucleotide sequence set out herein. It also provides proteins comprising sequences having sequence identity to those proteins. Depending on the particular sequence, the degree of sequence identity is preferably greater than 50% (e.g., 60%, 70%, 80%, 90%, 95%, 99% or more). Sequence identity is determined as above disclosed. These homologous proteins include mutants and allelic variants, encoded
30 within the *N. meningitidis* nucleotide sequence set out herein.

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The invention further provides proteins including fragments of an amino acid sequence encoded within a *N. meningitidis* nucleotide sequence set out in the sequence listing. The fragments should comprise at least n consecutive amino acids from the sequences and, depending on the particular sequence, n is 7 or more (e.g., 8, 10, 12, 14, 16, 18, 20 or more). Preferably the fragments comprise an epitope from the sequence.

The proteins of the invention can, of course, be prepared by various means (e.g., recombinant expression, purification from cell culture, chemical synthesis, etc.) and in various forms (e.g. native, fusions etc.). They are preferably prepared in substantially isolated form (i.e., substantially free from other *N. meningitidis* host cell proteins).

Various tests can be used to assess the *in vivo* immunogenicity of the proteins of the invention. For example, the proteins can be expressed recombinantly or chemically synthesized and used to screen patient sera by immunoblot. A positive reaction between the protein and patient serum indicates that the patient has previously mounted an immune response to the protein in question; i.e., the protein is an immunogen. This method can also be used to identify immunodominant proteins.

The invention also provides nucleic acid encoding a protein of the invention.

In a further aspect, the invention provides a computer, a computer memory, a computer storage medium (e.g., floppy disk, fixed disk, CD-ROM, etc.), and/or a computer database containing the nucleotide sequence of nucleic acid according to the invention. Preferably, it contains one or more of the *N. meningitidis* nucleotide sequences set out herein.

This may be used in the analysis of the *N. meningitidis* nucleotide sequences set out herein. For instance, it may be used in a search to identify open reading frames (ORFs) or coding sequences within the sequences.

In a further aspect, the invention provides a method for identifying an amino acid sequence, comprising the step of searching for putative open reading frames or protein-coding sequences within a *N. meningitidis* nucleotide sequence set out herein. Similarly, the invention provides the use of a *N. meningitidis* nucleotide sequence set out herein in a search for putative open reading frames or protein-coding sequences.

Open-reading frame or protein-coding sequence analysis is generally performed on a computer using standard bioinformatic techniques. Typical algorithms or program used in the analysis include ORFFINDER (NCBI), GENMARK [Borodovsky & McIninch (1993)]

Computers Chem 17:122-133], and GLIMMER [Salzberg et al. (1998) *Nucl Acids Res* 26:544-548].

A search for an open reading frame or protein-coding sequence may comprise the steps of searching a *N. meningitidis* nucleotide sequence set out herein for an initiation codon and searching the upstream sequence for an in-frame termination codon. The intervening
5 codons represent a putative protein-coding sequence. Typically, all six possible reading frames of a sequence will be searched.

An amino acid sequence identified in this way can be expressed using any suitable system to give a protein. This protein can be used to raise antibodies which recognize
10 epitopes within the identified amino acid sequence. These antibodies can be used to screen *N. meningitidis* to detect the presence of a protein comprising the identified amino acid sequence.

Furthermore, once an ORF or protein-coding sequence is identified, the sequence can be compared with sequence databases. Sequence analysis tools can be found at NCBI
15 (<http://www.ncbi.nlm.nih.gov>) e.g., the algorithms BLAST, BLAST2, BLASTn, BLASTp, tBLASTn, BLASTx, & tBLASTx [see also Altschul *et al.* (1997) Gapped BLAST and PSI-BLAST: new generation of protein database search programs. *Nucleic Acids Research* 25:2289-3402]. Suitable databases for comparison include the nonredundant GenBank, EMBL, DDBJ and PDB sequences, and the nonredundant GenBank CDS translations, PDB,
20 SwissProt, Spupdate and PIR sequences. This comparison may give an indication of the function of a protein.

Hydrophobic domains in an amino acid sequence can be predicted using algorithms such as those based on the statistical studies of Esposti *et al.* [Critical evaluation of the hydropathy of membrane proteins (1990) *Eur J Biochem* 190:207-219]. Hydrophobic
25 domains represent potential transmembrane regions or hydrophobic leader sequences, which suggest that the proteins may be secreted or be surface-located. These properties are typically representative of good immunogens.

Similarly, transmembrane domains or leader sequences can be predicted using the PSORT algorithm (<http://www.psort.nibb.ac.jp>), and functional domains can be predicted
30 using the MOTIFS program (GCG Wisconsin & PROSITE).

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The invention also provides nucleic acid including an open reading frame or protein-coding sequence present in a *N. meningitidis* nucleotide sequence set out herein.

Furthermore, the invention provides a protein including the amino acid sequence encoded by this open reading frame or protein-coding sequence.

5 According to a further aspect, the invention provides antibodies which bind to these proteins. These may be polyclonal or monoclonal and may be produced by any suitable means known to those skilled in the art.

 The antibodies of the invention can be used in a variety of ways, e.g., for confirmation that a protein is expressed, or to confirm where a protein is expressed. Labeled antibody
10 (e.g., fluorescent labeling for FACS) can be incubated with intact bacteria and the presence of label on the bacterial surface confirms the location of the protein, for instance.

 According to a further aspect, the invention provides compositions including protein, antibody, and/or nucleic acid according to the invention. These compositions may be suitable as vaccines, as immunogenic compositions, or as diagnostic reagents.

15 The invention also provides nucleic acid, protein, or antibody according to the invention for use as medicaments (e.g., as vaccines) or as diagnostic reagents. It also provides the use of nucleic acid, protein, or antibody according to the invention in the manufacture of (i) a medicament for treating or preventing infection due to Neisserial bacteria (ii) a diagnostic reagent for detecting the presence of Neisserial bacteria or of
20 antibodies raised against Neisserial bacteria. Said Neisserial bacteria may be any species or strain (such as *N. gonorrhoeae*) but are preferably *N. meningitidis*, especially strain A, strain B or strain C.

 In still yet another aspect, the present invention provides for compositions including proteins, nucleic acid molecules, or antibodies. More preferable aspects of the present
25 invention are drawn to immunogenic compositions of proteins. Further preferable aspects of the present invention contemplate pharmaceutical immunogenic compositions of proteins or vaccines and the use thereof in the manufacture of a medicament for the treatment or prevention of infection due to Neisserial bacteria, preferably infection of MenB.

 The invention also provides a method of treating a patient, comprising administering
30 to the patient a therapeutically effective amount of nucleic acid, protein, and/or antibody according to the invention.

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According to further aspects, the invention provides various processes.

A process for producing proteins of the invention is provided, comprising the step of culturing a host cell according to the invention under conditions which induce protein expression. A process which may further include chemical synthesis of proteins and/or
5 chemical synthesis (at least in part) of nucleotides.

A process for detecting polynucleotides of the invention is provided, comprising the steps of: (a) contacting a nucleic probe according to the invention with a biological sample under hybridizing conditions to form duplexes; and (b) detecting said duplexes.

A process for detecting proteins of the invention is provided, comprising the steps of:
10 (a) contacting an antibody according to the invention with a biological sample under conditions suitable for the formation of an antibody-antigen complexes; and (b) detecting said complexes.

Another aspect of the present invention provides for a process for detecting antibodies that selectably bind to antigens or polypeptides or proteins specific to any species or strain of
15 *Neisseria* bacteria and preferably to strains of *N. gonorrhoeae* but more preferably to strains of *N. meningitidis*, especially strain A, strain B or strain C, more preferably MenB, where the process comprises the steps of: (a) contacting antigen or polypeptide or protein according to the invention with a biological sample under conditions suitable for the formation of an antibody-antigen complexes; and (b) detecting said complexes.

20 Having now generally described the invention, the same will be more readily understood through reference to the following examples which are provided by way of illustration, and are not intended to be limiting of the present invention, unless specified.

Methodology - Summary of standard procedures and techniques.

25 General

This invention provides *Neisseria meningitidis* MenB nucleotide sequences, amino acid sequences encoded therein. With these disclosed sequences, nucleic acid probe assays and expression cassettes and vectors can be produced. The proteins can also be chemically synthesized. The expression vectors can be transformed into host cells to produce proteins.
30 The purified or isolated polypeptides can be used to produce antibodies to detect MenB proteins. Also, the host cells or extracts can be utilized for biological assays to isolate

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agonists or antagonists. In addition, with these sequences one can search to identify open reading frames and identify amino acid sequences. The proteins may also be used in immunogenic compositions and as vaccine components.

The practice of the present invention will employ, unless otherwise indicated, conventional techniques of molecular biology, microbiology, recombinant DNA, and immunology, which are within the skill of the art. Such techniques are explained fully in the literature e.g., Sambrook *Molecular Cloning: A Laboratory Manual, Second Edition* (1989); *DNA Cloning, Volumes I and II* (D.N. Glover ed. 1985); *Oligonucleotide Synthesis* (M.J. Gait ed, 1984); *Nucleic Acid Hybridization* (B.D. Hames & S.J. Higgins eds. 1984); *Transcription and Translation* (B.D. Hames & S.J. Higgins eds. 1984); *Animal Cell Culture* (R.I. Freshney ed. 1986); *Immobilized Cells and Enzymes* (IRL Press, 1986); B. Perbal, *A Practical Guide to Molecular Cloning* (1984); the *Methods in Enzymology* series (Academic Press, Inc.), especially volumes 154 & 155; *Gene Transfer Vectors for Mammalian Cells* (J.H. Miller and M.P. Calos eds. 1987, Cold Spring Harbor Laboratory); Mayer and Walker, eds. (1987), *Immunochemical Methods in Cell and Molecular Biology* (Academic Press, London); Scopes, (1987) *Protein Purification: Principles and Practice*, Second Edition (Springer-Verlag, N.Y.), and *Handbook of Experimental Immunology, Volumes I-IV* (D.M. Weir and C.C. Blackwell eds 1986).

Standard abbreviations for nucleotides and amino acids are used in this specification.

All publications, patents, and patent applications cited herein are incorporated in full by reference.

Expression systems

The *Neisseria* MenB nucleotide sequences can be expressed in a variety of different expression systems; for example those used with mammalian cells, plant cells, baculoviruses, bacteria, and yeast.

i. Mammalian Systems

Mammalian expression systems are known in the art. A mammalian promoter is any DNA sequence capable of binding mammalian RNA polymerase and initiating the downstream (3') transcription of a coding sequence (e.g., structural gene) into mRNA. A

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promoter will have a transcription initiating region, which is usually placed proximal to the 5' end of the coding sequence, and a TATA box, usually located 25-30 base pairs (bp) upstream of the transcription initiation site. The TATA box is thought to direct RNA polymerase II to begin RNA synthesis at the correct site. A mammalian promoter will also contain an upstream promoter element, usually located within 100 to 200 bp upstream of the TATA box. An upstream promoter element determines the rate at which transcription is initiated and can act in either orientation (Sambrook et al. (1989) "Expression of Cloned Genes in Mammalian Cells." In *Molecular Cloning: A Laboratory Manual*, 2nd ed.).

Mammalian viral genes are often highly expressed and have a broad host range; therefore sequences encoding mammalian viral genes provide particularly useful promoter sequences. Examples include the SV40 early promoter, mouse mammary tumor virus LTR promoter, adenovirus major late promoter (Ad MLP), and herpes simplex virus promoter. In addition, sequences derived from non-viral genes, such as the murine metallothionein gene, also provide useful promoter sequences. Expression may be either constitutive or regulated (inducible). Depending on the promoter selected, many promoters may be inducible using known substrates, such as the use of the mouse mammary tumor virus (MMTV) promoter with the glucocorticoid responsive element (GRE) that is induced by glucocorticoid in hormone-responsive transformed cells (see for example, U.S. Patent 5,783,681).

The presence of an enhancer element (enhancer), combined with the promoter elements described above, will usually increase expression levels. An enhancer is a regulatory DNA sequence that can stimulate transcription up to 1000-fold when linked to homologous or heterologous promoters, with synthesis beginning at the normal RNA start site. Enhancers are also active when they are placed upstream or downstream from the transcription initiation site, in either normal or flipped orientation, or at a distance of more than 1000 nucleotides from the promoter (Maniatis et al. (1987) *Science* 236:1237; Alberts et al. (1989) *Molecular Biology of the Cell*, 2nd ed.). Enhancer elements derived from viruses may be particularly useful, because they usually have a broader host range. Examples include the SV40 early gene enhancer (Dijkema et al (1985) *EMBO J.* 4:761) and the enhancer/promoters derived from the long terminal repeat (LTR) of the Rous Sarcoma Virus (Gorman et al. (1982b) *Proc. Natl. Acad. Sci.* 79:6777) and from human cytomegalovirus (Boshart et al. (1985) *Cell* 41:521). Additionally, some enhancers are regulatable and

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become active only in the presence of an inducer, such as a hormone or metal ion (Sassone-Corsi and Borelli (1986) *Trends Genet.* 2:215; Maniatis et al. (1987) *Science* 236:1237).

A DNA molecule may be expressed intracellularly in mammalian cells. A promoter sequence may be directly linked with the DNA molecule, in which case the first amino acid at the N-terminus of the recombinant protein will always be a methionine, which is encoded by the ATG start codon. If desired, the N-terminus may be cleaved from the protein by *in vitro* incubation with cyanogen bromide.

Alternatively, foreign proteins can also be secreted from the cell into the growth media by creating chimeric DNA molecules that encode a fusion protein comprised of a leader sequence fragment that provides for secretion of the foreign protein in mammalian cells. Preferably, there are processing sites encoded between the leader fragment and the foreign gene that can be cleaved either *in vivo* or *in vitro*. The leader sequence fragment usually encodes a signal peptide comprised of hydrophobic amino acids which direct the secretion of the protein from the cell. The adenovirus tripartite leader is an example of a leader sequence that provides for secretion of a foreign protein in mammalian cells.

Usually, transcription termination and polyadenylation sequences recognized by mammalian cells are regulatory regions located 3' to the translation stop codon and thus, together with the promoter elements, flank the coding sequence. The 3' terminus of the mature mRNA is formed by site-specific post-transcriptional cleavage and polyadenylation (Birnstiel et al. (1985) *Cell* 41:349; Proudfoot and Whitelaw (1988) "Termination and 3' end processing of eukaryotic RNA. In *Transcription and splicing* (ed. B.D. Hames and D.M. Glover); Proudfoot (1989) *Trends Biochem. Sci.* 14:105). These sequences direct the transcription of an mRNA which can be translated into the polypeptide encoded by the DNA. Examples of transcription terminator/polyadenylation signals include those derived from SV40 (Sambrook et al (1989) "Expression of cloned genes in cultured mammalian cells." In *Molecular Cloning: A Laboratory Manual*).

Usually, the above-described components, comprising a promoter, polyadenylation signal, and transcription termination sequence are put together into expression constructs. Enhancers, introns with functional splice donor and acceptor sites, and leader sequences may also be included in an expression construct, if desired. Expression constructs are often maintained in a replicon, such as an extrachromosomal element (e.g., plasmids) capable of

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stable maintenance in a host, such as mammalian cells or bacteria. Mammalian replication systems include those derived from animal viruses, which require trans-acting factors to replicate. For example, plasmids containing the replication systems of papovaviruses, such as SV40 (Gluzman (1981) *Cell* 23:175) or polyomavirus, replicate to extremely high copy number in the presence of the appropriate viral T antigen. Additional examples of mammalian replicons include those derived from bovine papillomavirus and Epstein-Barr virus. Additionally, the replicon may have two replication systems, thus allowing it to be maintained, for example, in mammalian cells for expression and in a prokaryotic host for cloning and amplification. Examples of such mammalian-bacteria shuttle vectors include pMT2 (Kaufman et al. (1989) *Mol. Cell. Biol.* 9:946) and pHEBO (Shimizu et al. (1986) *Mol. Cell. Biol.* 6:1074).

The transformation procedure used depends upon the host to be transformed. Methods for introduction of heterologous polynucleotides into mammalian cells are known in the art and include dextran-mediated transfection, calcium phosphate precipitation, polybrene mediated transfection, protoplast fusion, electroporation, encapsulation of the polynucleotide(s) in liposomes, and direct microinjection of the DNA into nuclei.

Mammalian cell lines available as hosts for expression are known in the art and include many immortalized cell lines available from the American Type Culture Collection (ATCC), including but not limited to, Chinese hamster ovary (CHO) cells, HeLa cells, baby hamster kidney (BHK) cells, monkey kidney cells (COS), human hepatocellular carcinoma cells (e.g., Hep G2), and a number of other cell lines.

ii. Plant Cellular Expression Systems

There are many plant cell culture and whole plant genetic expression systems known in the art. Exemplary plant cellular genetic expression systems include those described in patents, such as: U.S. 5,693,506; US 5,659,122; and US 5,608,143. Additional examples of genetic expression in plant cell culture has been described by Zenk, *Phytochemistry* 30:3861-3863 (1991). Descriptions of plant protein signal peptides may be found in addition to the references described above in Vaulcombe et al., *Mol. Gen. Genet.* 209:33-40 (1987); Chandler et al., *Plant Molecular Biology* 3:407-418 (1984); Rogers, *J. Biol. Chem.* 260:3731-3738 (1985); Rothstein et al., *Gene* 55:353-356 (1987); Whittier et al., *Nucleic Acids*

Research 15:2515-2535 (1987); Wirsal et al., *Molecular Microbiology* 3:3-14 (1989); Yu et al., *Gene* 122:247-253 (1992). A description of the regulation of plant gene expression by the phytohormone, gibberellic acid and secreted enzymes induced by gibberellic acid can be found in R.L. Jones and J. MacMillin, Gibberellins: in: *Advanced Plant Physiology*,.

- 5 Malcolm B. Wilkins, ed., 1984 Pitman Publishing Limited, London, pp. 21-52. References that describe other metabolically-regulated genes: Sheen, *Plant Cell*, 2:1027-1038(1990); Maas et al., *EMBO J.* 9:3447-3452 (1990); Benkel and Hickey, *Proc. Natl. Acad. Sci.* 84:1337-1339 (1987)

Typically, using techniques known in the art, a desired polynucleotide sequence is
10 inserted into an expression cassette comprising genetic regulatory elements designed for operation in plants. The expression cassette is inserted into a desired expression vector with companion sequences upstream and downstream from the expression cassette suitable for expression in a plant host. The companion sequences will be of plasmid or viral origin and provide necessary characteristics to the vector to permit the vectors to move DNA from an
15 original cloning host, such as bacteria, to the desired plant host. The basic bacterial/plant vector construct will preferably provide a broad host range prokaryote replication origin; a prokaryote selectable marker; and, for *Agrobacterium* transformations, T DNA sequences for *Agrobacterium*-mediated transfer to plant chromosomes. Where the heterologous gene is not readily amenable to detection, the construct will preferably also have a selectable marker
20 gene suitable for determining if a plant cell has been transformed. A general review of suitable markers, for example for the members of the grass family, is found in Wilmink and Dons, 1993, *Plant Mol. Biol. Repr.*, 11(2):165-185.

Sequences suitable for permitting integration of the heterologous sequence into the plant genome are also recommended. These might include transposon sequences and the like
25 for homologous recombination as well as Ti sequences which permit random insertion of a heterologous expression cassette into a plant genome. Suitable prokaryote selectable markers include resistance toward antibiotics such as ampicillin or tetracycline. Other DNA sequences encoding additional functions may also be present in the vector, as is known in the art.

30 The nucleic acid molecules of the subject invention may be included into an expression cassette for expression of the protein(s) of interest. Usually, there will be only

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one expression cassette, although two or more are feasible. The recombinant expression cassette will contain in addition to the heterologous protein encoding sequence the following elements, a promoter region, plant 5' untranslated sequences, initiation codon depending upon whether or not the structural gene comes equipped with one, and a transcription and translation termination sequence. Unique restriction enzyme sites at the 5' and 3' ends of the cassette allow for easy insertion into a pre-existing vector.

A heterologous coding sequence may be for any protein relating to the present invention. The sequence encoding the protein of interest will encode a signal peptide which allows processing and translocation of the protein, as appropriate, and will usually lack any sequence which might result in the binding of the desired protein of the invention to a membrane. Since, for the most part, the transcriptional initiation region will be for a gene which is expressed and translocated during germination, by employing the signal peptide which provides for translocation, one may also provide for translocation of the protein of interest. In this way, the protein(s) of interest will be translocated from the cells in which they are expressed and may be efficiently harvested. Typically secretion in seeds are across the aleurone or scutellar epithelium layer into the endosperm of the seed. While it is not required that the protein be secreted from the cells in which the protein is produced, this facilitates the isolation and purification of the recombinant protein.

Since the ultimate expression of the desired gene product will be in a eucaryotic cell it is desirable to determine whether any portion of the cloned gene contains sequences which will be processed out as introns by the host's spliceosome machinery. If so, site-directed mutagenesis of the "intron" region may be conducted to prevent losing a portion of the genetic message as a false intron code, Reed and Maniatis, *Cell* 41:95-105, 1985.

The vector can be microinjected directly into plant cells by use of micropipettes to mechanically transfer the recombinant DNA. Crossway, *Mol. Gen. Genet.*, 202:179-185, 1985. The genetic material may also be transferred into the plant cell by using polyethylene glycol, Krens, et al., *Nature*, 296, 72-74, 1982. Another method of introduction of nucleic acid segments is high velocity ballistic penetration by small particles with the nucleic acid either within the matrix of small beads or particles, or on the surface, Klein, et al., *Nature*, 327, 70-73, 1987 and Knudsen and Muller, 1991, *Planta*, 185:330-336 teaching particle bombardment of barley endosperm to create transgenic barley. Yet another method of

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introduction would be fusion of protoplasts with other entities, either minicells, cells, lysosomes or other fusible lipid-surfaced bodies, Fraley, et al., *Proc. Natl. Acad. Sci. USA*, 79, 1859-1863, 1982.

The vector may also be introduced into the plant cells by electroporation. (Fromm et al., *Proc. Natl. Acad. Sci. USA* 82:5824, 1985). In this technique, plant protoplasts are electroporated in the presence of plasmids containing the gene construct. Electrical impulses of high field strength reversibly permeabilize biomembranes allowing the introduction of the plasmids. Electroporated plant protoplasts reform the cell wall, divide, and form plant callus.

All plants from which protoplasts can be isolated and cultured to give whole regenerated plants can be transformed by the present invention so that whole plants are recovered which contain the transferred gene. It is known that practically all plants can be regenerated from cultured cells or tissues, including but not limited to all major species of sugarcane, sugar beet, cotton, fruit and other trees, legumes and vegetables. Some suitable plants include, for example, species from the genera *Fragaria*, *Lotus*, *Medicago*, *Onobrychis*, *Trifolium*, *Trigonella*, *Vigna*, *Citrus*, *Linum*, *Geranium*, *Manihot*, *Daucus*, *Arabidopsis*, *Brassica*, *Raphanus*, *Sinapis*, *Atropa*, *Capsicum*, *Datura*, *Hyoscyamus*, *Lycopersion*, *Nicotiana*, *Solanum*, *Petunia*, *Digitalis*, *Majorana*, *Cichorium*, *Helianthus*, *Lactuca*, *Bromus*, *Asparagus*, *Antirrhinum*, *Hererocallis*, *Nemesia*, *Pelargonium*, *Panicum*, *Pennisetum*, *Ranunculus*, *Senecio*, *Salpiglossis*, *Cucumis*, *Browaalia*, *Glycine*, *Lolium*, *Zea*, *Triticum*, *Sorghum*, and *Datura*.

Means for regeneration vary from species to species of plants, but generally a suspension of transformed protoplasts containing copies of the heterologous gene is first provided. Callus tissue is formed and shoots may be induced from callus and subsequently rooted. Alternatively, embryo formation can be induced from the protoplast suspension. These embryos germinate as natural embryos to form plants. The culture media will generally contain various amino acids and hormones, such as auxin and cytokinins. It is also advantageous to add glutamic acid and proline to the medium, especially for such species as corn and alfalfa. Shoots and roots normally develop simultaneously. Efficient regeneration will depend on the medium, on the genotype, and on the history of the culture. If these three variables are controlled, then regeneration is fully reproducible and repeatable.

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In some plant cell culture systems, the desired protein of the invention may be excreted or alternatively, the protein may be extracted from the whole plant. Where the desired protein of the invention is secreted into the medium, it may be collected. Alternatively, the embryos and embryoless-half seeds or other plant tissue may be mechanically disrupted to release any secreted protein between cells and tissues. The mixture may be suspended in a buffer solution to retrieve soluble proteins. Conventional protein isolation and purification methods will be then used to purify the recombinant protein. Parameters of time, temperature pH, oxygen, and volumes will be adjusted through routine methods to optimize expression and recovery of heterologous protein.

iii. Baculovirus Systems

The polynucleotide encoding the protein can also be inserted into a suitable insect expression vector, and is operably linked to the control elements within that vector. Vector construction employs techniques which are known in the art. Generally, the components of the expression system include a transfer vector, usually a bacterial plasmid, which contains both a fragment of the baculovirus genome, and a convenient restriction site for insertion of the heterologous gene or genes to be expressed; a wild type baculovirus with a sequence homologous to the baculovirus-specific fragment in the transfer vector (this allows for the homologous recombination of the heterologous gene in to the baculovirus genome); and appropriate insect host cells and growth media.

After inserting the DNA sequence encoding the protein into the transfer vector, the vector and the wild type viral genome are transfected into an insect host cell where the vector and viral genome are allowed to recombine. The packaged recombinant virus is expressed and recombinant plaques are identified and purified. Materials and methods for baculovirus/insect cell expression systems are commercially available in kit form from, *inter alia*, Invitrogen, San Diego CA ("MaxBac" kit). These techniques are generally known to those skilled in the art and fully described in Summers and Smith, *Texas Agricultural Experiment Station Bulletin No. 1555* (1987) (hereinafter "Summers and Smith").

Prior to inserting the DNA sequence encoding the protein into the baculovirus genome, the above described components, comprising a promoter, leader (if desired), coding sequence of interest, and transcription termination sequence, are usually assembled into an

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intermediate transplacement construct (transfer vector). This construct may contain a single gene and operably linked regulatory elements; multiple genes, each with its own set of operably linked regulatory elements; or multiple genes, regulated by the same set of regulatory elements. Intermediate transplacement constructs are often maintained in a replicon, such as an extrachromosomal element (e.g., plasmids) capable of stable maintenance in a host, such as a bacterium. The replicon will have a replication system, thus allowing it to be maintained in a suitable host for cloning and amplification.

Currently, the most commonly used transfer vector for introducing foreign genes into AcNPV is pAc373. Many other vectors, known to those of skill in the art, have also been designed. These include, for example, pVL985 (which alters the polyhedrin start codon from ATG to ATT, and which introduces a BamHI cloning site 32 basepairs downstream from the ATT; see Luckow and Summers, *Virology* (1989) 17:31.

The plasmid usually also contains the polyhedrin polyadenylation signal (Miller et al. (1988) *Ann. Rev. Microbiol.*, 42:177) and a prokaryotic ampicillin-resistance (*amp*) gene and origin of replication for selection and propagation in *E. coli*.

Baculovirus transfer vectors usually contain a baculovirus promoter. A baculovirus promoter is any DNA sequence capable of binding a baculovirus RNA polymerase and initiating the downstream (5' to 3') transcription of a coding sequence (e.g., structural gene) into mRNA. A promoter will have a transcription initiation region which is usually placed proximal to the 5' end of the coding sequence. This transcription initiation region usually includes an RNA polymerase binding site and a transcription initiation site. A baculovirus transfer vector may also have a second domain called an enhancer, which, if present, is usually distal to the structural gene. Expression may be either regulated or constitutive.

Structural genes, abundantly transcribed at late times in a viral infection cycle, provide particularly useful promoter sequences. Examples include sequences derived from the gene encoding the viral polyhedron protein, Friesen et al., (1986) "The Regulation of Baculovirus Gene Expression," in: *The Molecular Biology of Baculoviruses* (ed. Walter Doerfler); EPO Publ. Nos. 127 839 and 155 476; and the gene encoding the p10 protein, Vlak et al., (1988), *J. Gen. Virol.* 69:765.

DNA encoding suitable signal sequences can be derived from genes for secreted insect or baculovirus proteins, such as the baculovirus polyhedrin gene (Carbonell et al.

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(1988) *Gene*, 73:409). Alternatively, since the signals for mammalian cell posttranslational modifications (such as signal peptide cleavage, proteolytic cleavage, and phosphorylation) appear to be recognized by insect cells, and the signals required for secretion and nuclear accumulation also appear to be conserved between the invertebrate cells and vertebrate cells, 5 leaders of non-insect origin, such as those derived from genes encoding human (alpha) α -interferon, Maeda et al., (1985), *Nature* 315:592; human gastrin-releasing peptide, Lebacqz-Verheyden et al., (1988), *Molec. Cell. Biol.* 8:3129; human IL-2, Smith et al., (1985) *Proc. Nat'l Acad. Sci. USA*, 82:8404; mouse IL-3, (Miyajima et al., (1987) *Gene* 58:273; and human glucocerebrosidase, Martin et al. (1988) *DNA*, 7:99, can also be used to provide for 10 secretion in insects.

A recombinant polypeptide or polyprotein may be expressed intracellularly or, if it is expressed with the proper regulatory sequences, it can be secreted. Good intracellular expression of nonfused foreign proteins usually requires heterologous genes that ideally have a short leader sequence containing suitable translation initiation signals preceding an ATG 15 start signal. If desired, methionine at the N-terminus may be cleaved from the mature protein by *in vitro* incubation with cyanogen bromide.

Alternatively, recombinant polyproteins or proteins which are not naturally secreted can be secreted from the insect cell by creating chimeric DNA molecules that encode a fusion protein comprised of a leader sequence fragment that provides for secretion of the foreign 20 protein in insects. The leader sequence fragment usually encodes a signal peptide comprised of hydrophobic amino acids which direct the translocation of the protein into the endoplasmic reticulum.

After insertion of the DNA sequence and/or the gene encoding the expression product precursor of the protein, an insect cell host is co-transformed with the heterologous DNA of 25 the transfer vector and the genomic DNA of wild type baculovirus -- usually by co-transfection. The promoter and transcription termination sequence of the construct will usually comprise a 2-5kb section of the baculovirus genome. Methods for introducing heterologous DNA into the desired site in the baculovirus virus are known in the art. (See Summers and Smith *supra*; Ju et al. (1987); Smith et al., *Mol. Cell. Biol.* (1983) 3:2156; and 30 Luckow and Summers (1989)). For example, the insertion can be into a gene such as the polyhedrin gene, by homologous double crossover recombination; insertion can also be into a

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restriction enzyme site engineered into the desired baculovirus gene. Miller et al., (1989), *Bioessays* 4:91. The DNA sequence, when cloned in place of the polyhedrin gene in the expression vector, is flanked both 5' and 3' by polyhedrin-specific sequences and is positioned downstream of the polyhedrin promoter.

5 The newly formed baculovirus expression vector is subsequently packaged into an infectious recombinant baculovirus. Homologous recombination occurs at low frequency (between about 1% and about 5%); thus, the majority of the virus produced after cotransfection is still wild-type virus. Therefore, a method is necessary to identify recombinant viruses. An advantage of the expression system is a visual screen allowing
10 recombinant viruses to be distinguished. The polyhedrin protein, which is produced by the native virus, is produced at very high levels in the nuclei of infected cells at late times after viral infection. Accumulated polyhedrin protein forms occlusion bodies that also contain embedded particles. These occlusion bodies, up to 15 μ m in size, are highly refractile, giving them a bright shiny appearance that is readily visualized under the light microscope. Cells
15 infected with recombinant viruses lack occlusion bodies. To distinguish recombinant virus from wild-type virus, the transfection supernatant is plaqued onto a monolayer of insect cells by techniques known to those skilled in the art. Namely, the plaques are screened under the light microscope for the presence (indicative of wild-type virus) or absence (indicative of recombinant virus) of occlusion bodies. *Current Protocols in Microbiology* Vol. 2 (Ausubel
20 et al. eds) at 16.8 (Supp. 10, 1990); Summers and Smith, *supra*; Miller et al. (1989).

Recombinant baculovirus expression vectors have been developed for infection into several insect cells. For example, recombinant baculoviruses have been developed for, *inter alia*: *Aedes aegypti*, *Autographa californica*, *Bombyx mori*, *Drosophila melanogaster*, *Spodoptera frugiperda*, and *Trichoplusia ni* (PCT Pub. No. WO 89/046699; Carbonell et al.,
25 (1985) *J. Virol.* 56:153; Wright (1986) *Nature* 321:718; Smith et al., (1983) *Mol. Cell. Biol.* 3:2156; and see generally, Fraser, et al. (1989) *In Vitro Cell. Dev. Biol.* 25:225).

Cells and cell culture media are commercially available for both direct and fusion expression of heterologous polypeptides in a baculovirus/expression system; cell culture technology is generally known to those skilled in the art. See, e.g., Summers and Smith
30 *supra*.

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The modified insect cells may then be grown in an appropriate nutrient medium, which allows for stable maintenance of the plasmid(s) present in the modified insect host. Where the expression product gene is under inducible control, the host may be grown to high density, and expression induced. Alternatively, where expression is constitutive, the product
5 will be continuously expressed into the medium and the nutrient medium must be continuously circulated, while removing the product of interest and augmenting depleted nutrients. The product may be purified by such techniques as chromatography, e.g., HPLC, affinity chromatography, ion exchange chromatography, etc.; electrophoresis; density gradient centrifugation; solvent extraction, or the like. As appropriate, the product may be
10 further purified, as required, so as to remove substantially any insect proteins which are also secreted in the medium or result from lysis of insect cells, so as to provide a product which is at least substantially free of host debris, e.g., proteins, lipids and polysaccharides.

In order to obtain protein expression, recombinant host cells derived from the transformants are incubated under conditions which allow expression of the recombinant
15 protein encoding sequence. These conditions will vary, dependent upon the host cell selected. However, the conditions are readily ascertainable to those of ordinary skill in the art, based upon what is known in the art.

iv. Bacterial Systems

20 Bacterial expression techniques are known in the art. A bacterial promoter is any DNA sequence capable of binding bacterial RNA polymerase and initiating the downstream (3') transcription of a coding sequence (e.g. structural gene) into mRNA. A promoter will have a transcription initiation region which is usually placed proximal to the 5' end of the coding sequence. This transcription initiation region usually includes an RNA polymerase
25 binding site and a transcription initiation site. A bacterial promoter may also have a second domain called an operator, that may overlap an adjacent RNA polymerase binding site at which RNA synthesis begins. The operator permits negative regulated (inducible) transcription, as a gene repressor protein may bind the operator and thereby inhibit transcription of a specific gene. Constitutive expression may occur in the absence of negative
30 regulatory elements, such as the operator. In addition, positive regulation may be achieved by a gene activator protein binding sequence, which, if present is usually proximal (5') to the

RNA polymerase binding sequence. An example of a gene activator protein is the catabolite activator protein (CAP), which helps initiate transcription of the lac operon in *Escherichia coli* (*E. coli*) (Raibaud *et al.* (1984) *Annu. Rev. Genet.* 18:173). Regulated expression may therefore be either positive or negative, thereby either enhancing or reducing transcription.

5 Sequences encoding metabolic pathway enzymes provide particularly useful promoter sequences. Examples include promoter sequences derived from sugar metabolizing enzymes, such as galactose, lactose (*lac*) (Chang *et al.* (1977) *Nature* 198:1056), and maltose. Additional examples include promoter sequences derived from biosynthetic enzymes such as tryptophan (*trp*) (Goeddel *et al.* (1980) *Nuc. Acids Res.* 8:4057; Yelverton *et al.* (1981) *Nucl.*
10 *Acids Res.* 9:731; U.S. Patent 4,738,921; EPO Publ. Nos. 036 776 and 121 775). The beta-lactamase (*bla*) promoter system (Weissmann (1981) "The cloning of interferon and other mistakes." In *Interferon 3* (ed. I. Gresser)), bacteriophage lambda PL (Shimatake *et al.* (1981) *Nature* 292:128) and T5 (U.S. Patent 4,689,406) promoter systems also provide useful promoter sequences.

15 In addition, synthetic promoters which do not occur in nature also function as bacterial promoters. For example, transcription activation sequences of one bacterial or bacteriophage promoter may be joined with the operon sequences of another bacterial or bacteriophage promoter, creating a synthetic hybrid promoter (U.S. Patent 4,551,433). For example, the *lac* promoter is a hybrid *trp-lac* promoter comprised of both *trp* promoter and
20 *lac* operon sequences that is regulated by the *lac* repressor (Amann *et al.* (1983) *Gene* 25:167; de Boer *et al.* (1983) *Proc. Natl. Acad. Sci.* 80:21). Furthermore, a bacterial promoter can include naturally occurring promoters of non-bacterial origin that have the ability to bind bacterial RNA polymerase and initiate transcription. A naturally occurring promoter of non-bacterial origin can also be coupled with a compatible RNA polymerase to produce high
25 levels of expression of some genes in prokaryotes. The bacteriophage T7 RNA polymerase/promoter system is an example of a coupled promoter system (Studier *et al.* (1986) *J. Mol. Biol.* 189:113; Tabor *et al.* (1985) *Proc Natl. Acad. Sci.* 82:1074). In addition, a hybrid promoter can also be comprised of a bacteriophage promoter and an *E. coli* operator region (EPO Publ. No. 267 851).

30 In addition to a functioning promoter sequence, an efficient ribosome binding site is also useful for the expression of foreign genes in prokaryotes. In *E. coli*, the ribosome

binding site is called the Shine-Dalgarno (SD) sequence and includes an initiation codon (ATG) and a sequence 3-9 nucleotides in length located 3-11 nucleotides upstream of the initiation codon (Shine *et al.* (1975) *Nature* 254:34). The SD sequence is thought to promote binding of mRNA to the ribosome by the pairing of bases between the SD sequence and the 3' end of *E. coli* 16S rRNA (Steitz *et al.* (1979) "Genetic signals and nucleotide sequences in messenger RNA." In *Biological Regulation and Development: Gene Expression* (ed. R.F. Goldberger)). To express eukaryotic genes and prokaryotic genes with weak ribosome-binding site, it is often necessary to optimize the distance between the SD sequence and the ATG of the eukaryotic gene (Sambrook *et al.* (1989) "Expression of cloned genes in *Escherichia coli*." In *Molecular Cloning: A Laboratory Manual*).

A DNA molecule may be expressed intracellularly. A promoter sequence may be directly linked with the DNA molecule, in which case the first amino acid at the N-terminus will always be a methionine, which is encoded by the ATG start codon. If desired, methionine at the N-terminus may be cleaved from the protein by *in vitro* incubation with cyanogen bromide or by either *in vivo* or *in vitro* incubation with a bacterial methionine N-terminal peptidase (EPO Publ. No. 219 237).

Fusion proteins provide an alternative to direct expression. Usually, a DNA sequence encoding the N-terminal portion of an endogenous bacterial protein, or other stable protein, is fused to the 5' end of heterologous coding sequences. Upon expression, this construct will provide a fusion of the two amino acid sequences. For example, the bacteriophage lambda cell gene can be linked at the 5' terminus of a foreign gene and expressed in bacteria. The resulting fusion protein preferably retains a site for a processing enzyme (factor Xa) to cleave the bacteriophage protein from the foreign gene (Nagai *et al.* (1984) *Nature* 309:810). Fusion proteins can also be made with sequences from the *lacZ* (Jia *et al.* (1987) *Gene* 60:197), *trpE* (Allen *et al.* (1987) *J. Biotechnol.* 5:93; Makoff *et al.* (1989) *J. Gen. Microbiol.* 135:11), and *Chey* (EPO Publ. No. 324 647) genes. The DNA sequence at the junction of the two amino acid sequences may or may not encode a cleavable site. Another example is a ubiquitin fusion protein. Such a fusion protein is made with the ubiquitin region that preferably retains a site for a processing enzyme (e.g. ubiquitin specific processing-protease) to cleave the ubiquitin from the foreign protein. Through this method, native foreign protein can be isolated (Miller *et al.* (1989) *Bio/Technology* 7:698).

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Alternatively, foreign proteins can also be secreted from the cell by creating chimeric DNA molecules that encode a fusion protein comprised of a signal peptide sequence fragment that provides for secretion of the foreign protein in bacteria (U.S. Patent 4,336,336). The signal sequence fragment usually encodes a signal peptide comprised of hydrophobic amino acids which direct the secretion of the protein from the cell. The protein is either secreted into the growth media (gram-positive bacteria) or into the periplasmic space, located between the inner and outer membrane of the cell (gram-negative bacteria). Preferably there are processing sites, which can be cleaved either *in vivo* or *in vitro* encoded between the signal peptide fragment and the foreign gene.

DNA encoding suitable signal sequences can be derived from genes for secreted bacterial proteins, such as the *E. coli* outer membrane protein gene (*ompA*) (Masui *et al.* (1983), in: *Experimental Manipulation of Gene Expression*; Ghayeb *et al.* (1984) *EMBO J.* 3:2437) and the *E. coli* alkaline phosphatase signal sequence (*phoA*) (Oka *et al.* (1985) *Proc. Natl. Acad. Sci.* 82:7212). As an additional example, the signal sequence of the alpha-amylase gene from various *Bacillus* strains can be used to secrete heterologous proteins from *B. subtilis* (Palva *et al.* (1982) *Proc. Natl. Acad. Sci. USA* 79:5582; EPO Publ. No. 244 042).

Usually, transcription termination sequences recognized by bacteria are regulatory regions located 3' to the translation stop codon, and thus together with the promoter flank the coding sequence. These sequences direct the transcription of an mRNA which can be translated into the polypeptide encoded by the DNA. Transcription termination sequences frequently include DNA sequences of about 50 nucleotides capable of forming stem loop structures that aid in terminating transcription. Examples include transcription termination sequences derived from genes with strong promoters, such as the *trp* gene in *E. coli* as well as other biosynthetic genes.

Usually, the above described components, comprising a promoter, signal sequence (if desired), coding sequence of interest, and transcription termination sequence, are put together into expression constructs. Expression constructs are often maintained in a replicon, such as an extrachromosomal element (e.g., plasmids) capable of stable maintenance in a host, such as bacteria. The replicon will have a replication system, thus allowing it to be maintained in a prokaryotic host either for expression or for cloning and amplification. In addition, a replicon may be either a high or low copy number plasmid. A high copy number plasmid will

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generally have a copy number ranging from about 5 to about 200, and usually about 10 to about 150. A host containing a high copy number plasmid will preferably contain at least about 10, and more preferably at least about 20 plasmids. Either a high or low copy number vector may be selected, depending upon the effect of the vector and the foreign protein on the
5 host.

Alternatively, the expression constructs can be integrated into the bacterial genome with an integrating vector. Integrating vectors usually contain at least one sequence homologous to the bacterial chromosome that allows the vector to integrate. Integrations appear to result from recombinations between homologous DNA in the vector and the
10 bacterial chromosome. For example, integrating vectors constructed with DNA from various *Bacillus* strains integrate into the *Bacillus* chromosome (EPO Publ. No. 127 328). Integrating vectors may also be comprised of bacteriophage or transposon sequences.

Usually, extrachromosomal and integrating expression constructs may contain selectable markers to allow for the selection of bacterial strains that have been transformed.
15 Selectable markers can be expressed in the bacterial host and may include genes which render bacteria resistant to drugs such as ampicillin, chloramphenicol, erythromycin, kanamycin (neomycin), and tetracycline (Davies *et al.* (1978) *Annu. Rev. Microbiol.* 32:469). Selectable markers may also include biosynthetic genes, such as those in the histidine, tryptophan, and leucine biosynthetic pathways.

20 Alternatively, some of the above described components can be put together in transformation vectors. Transformation vectors are usually comprised of a selectable market that is either maintained in a replicon or developed into an integrating vector, as described above.

Expression and transformation vectors, either extra-chromosomal replicons or
25 integrating vectors, have been developed for transformation into many bacteria. For example, expression vectors have been developed for, *inter alia*, the following bacteria: *Bacillus subtilis* (Palva *et al.* (1982) *Proc. Natl. Acad. Sci. USA* 79:5582; EPO Publ. Nos. 036 259 and 063 953; PCT Publ. No. WO 84/04541), *Escherichia coli* (Shimatake *et al.* (1981) *Nature* 292:128; Amann *et al.* (1985) *Gene* 40:183; Studier *et al.* (1986) *J. Mol. Biol.* 189:113; EPO
30 Publ. Nos. 036 776, 136 829 and 136 907), *Streptococcus cremoris* (Powell *et al.* (1988)

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Appl. Environ. Microbiol. 54:655); *Streptococcus lividans* (Powell *et al.* (1988) *Appl. Environ. Microbiol.* 54:655), *Streptomyces lividans* (U.S. Patent 4,745,056).

Methods of introducing exogenous DNA into bacterial hosts are well-known in the art, and usually include either the transformation of bacteria treated with CaCl_2 or other agents, such as divalent cations and DMSO. DNA can also be introduced into bacterial cells by electroporation. Transformation procedures usually vary with the bacterial species to be transformed. (See e.g., use of *Bacillus*: Masson *et al.* (1989) *FEMS Microbiol. Lett.* 60:273; Palva *et al.* (1982) *Proc. Natl. Acad. Sci. USA* 79:5582; EPO Publ. Nos. 036 259 and 063 953; PCT Publ. No. WO 84/04541; use of *Campylobacter*: Miller *et al.* (1988) *Proc. Natl. Acad. Sci.* 85:856; and Wang *et al.* (1990) *J. Bacteriol.* 172:949; use of *Escherichia coli*: Cohen *et al.* (1973) *Proc. Natl. Acad. Sci.* 69:2110; Dower *et al.* (1988) *Nucleic Acids Res.* 16:6127; Kushner (1978) "An improved method for transformation of *Escherichia coli* with COE1-derived plasmids. In *Genetic Engineering: Proceedings of the International Symposium on Genetic Engineering* (eds. H.W. Boyer and S. Nicosia); Mandel *et al.* (1970) *J. Mol. Biol.* 53:159; Taketo (1988) *Biochim. Biophys. Acta* 949:318; use of *Lactobacillus*: Chassy *et al.* (1987) *FEMS Microbiol. Lett.* 44:173; use of *Pseudomonas*: Fiedler *et al.* (1988) *Anal. Biochem* 170:38; use of *Staphylococcus*: Augustin *et al.* (1990) *FEMS Microbiol. Lett.* 66:203; use of *Streptococcus*: Barany *et al.* (1980) *J. Bacteriol.* 144:698; Harlander (1987) "Transformation of *Streptococcus lactis* by electroporation, in: *Streptococcal Genetics* (ed. J. Ferretti and R. Curtiss III); Perry *et al.* (1981) *Infect. Immun.* 32:1295; Powell *et al.* (1988) *Appl. Environ. Microbiol.* 54:655; Somkuti *et al.* (1987) *Proc. 4th Eur. Cong. Biotechnology* 1:412.

v. Yeast Expression

Yeast expression systems are also known to one of ordinary skill in the art. A yeast promoter is any DNA sequence capable of binding yeast RNA polymerase and initiating the downstream (3') transcription of a coding sequence (e.g. structural gene) into mRNA. A promoter will have a transcription initiation region which is usually placed proximal to the 5' end of the coding sequence. This transcription initiation region usually includes an RNA polymerase binding site (the "TATA Box") and a transcription initiation site. A yeast promoter may also have a second domain called an upstream activator sequence (UAS),

which, if present, is usually distal to the structural gene. The UAS permits regulated (inducible) expression. Constitutive expression occurs in the absence of a UAS. Regulated expression may be either positive or negative, thereby either enhancing or reducing transcription.

5 Yeast is a fermenting organism with an active metabolic pathway, therefore sequences encoding enzymes in the metabolic pathway provide particularly useful promoter sequences. Examples include alcohol dehydrogenase (ADH) (EPO Publ. No. 284 044), enolase, glucokinase, glucose-6-phosphate isomerase, glyceraldehyde-3-phosphate-dehydrogenase (GAP or GAPDH), hexokinase, phosphofructokinase, 3-phosphoglycerate mutase, and
10 pyruvate kinase (PyK) (EPO Publ. No. 329 203). The yeast *PHO5* gene, encoding acid phosphatase, also provides useful promoter sequences (Myanohara *et al.* (1983) *Proc. Natl. Acad. Sci. USA* 80:1).

In addition, synthetic promoters which do not occur in nature also function as yeast promoters. For example, UAS sequences of one yeast promoter may be joined with the
15 transcription activation region of another yeast promoter, creating a synthetic hybrid promoter. Examples of such hybrid promoters include the ADH regulatory sequence linked to the GAP transcription activation region (U.S. Patent Nos. 4,876,197 and 4,880,734). Other examples of hybrid promoters include promoters which consist of the regulatory sequences of either the *ADH2*, *GAL4*, *GAL10*, OR *PHO5* genes, combined with the transcriptional
20 activation region of a glycolytic enzyme gene such as GAP or PyK (EPO Publ. No. 164 556). Furthermore, a yeast promoter can include naturally occurring promoters of non-yeast origin that have the ability to bind yeast RNA polymerase and initiate transcription. Examples of such promoters include, *inter alia*, (Cohen *et al.* (1980) *Proc. Natl. Acad. Sci. USA* 77:1078; Henikoff *et al.* (1981) *Nature* 283:835; Hollenberg *et al.* (1981) *Curr. Topics Microbiol.*
25 *Immunol.* 96:119; Hollenberg *et al.* (1979) "The Expression of Bacterial Antibiotic Resistance Genes in the Yeast *Saccharomyces cerevisiae*," in: *Plasmids of Medical, Environmental and Commercial Importance* (eds. K.N. Timmis and A. Puhler); Mercerau-Puigalon *et al.* (1980) *Gene* 11:163; Panthier *et al.* (1980) *Curr. Genet.* 2:109;).

A DNA molecule may be expressed intracellularly in yeast. A promoter sequence
30 may be directly linked with the DNA molecule, in which case the first amino acid at the N-terminus of the recombinant protein will always be a methionine, which is encoded by the

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ATG start codon. If desired, methionine at the N-terminus may be cleaved from the protein by *in vitro* incubation with cyanogen bromide.

Fusion proteins provide an alternative for yeast expression systems, as well as in mammalian, plant, baculovirus, and bacterial expression systems. Usually, a DNA sequence encoding the N-terminal portion of an endogenous yeast protein, or other stable protein, is fused to the 5' end of heterologous coding sequences. Upon expression, this construct will provide a fusion of the two amino acid sequences. For example, the yeast or human superoxide dismutase (SOD) gene, can be linked at the 5' terminus of a foreign gene and expressed in yeast. The DNA sequence at the junction of the two amino acid sequences may or may not encode a cleavable site. See e.g., EPO Publ. No. 196056. Another example is a ubiquitin fusion protein. Such a fusion protein is made with the ubiquitin region that preferably retains a site for a processing enzyme (e.g. ubiquitin-specific processing protease) to cleave the ubiquitin from the foreign protein. Through this method, therefore, native foreign protein can be isolated (e.g., WO88/024066).

Alternatively, foreign proteins can also be secreted from the cell into the growth media by creating chimeric DNA molecules that encode a fusion protein comprised of a leader sequence fragment that provide for secretion in yeast of the foreign protein. Preferably, there are processing sites encoded between the leader fragment and the foreign gene that can be cleaved either *in vivo* or *in vitro*. The leader sequence fragment usually encodes a signal peptide comprised of hydrophobic amino acids which direct the secretion of the protein from the cell.

DNA encoding suitable signal sequences can be derived from genes for secreted yeast proteins, such as the yeast invertase gene (EPO Publ. No. 012 873; JPO Publ. No. 62:096,086) and the A-factor gene (U.S. Patent 4,588,684). Alternatively, leaders of non-yeast origin, such as an interferon leader, exist that also provide for secretion in yeast (EPO Publ. No. 060 057).

A preferred class of secretion leaders are those that employ a fragment of the yeast alpha-factor gene, which contains both a "pre" signal sequence, and a "pro" region. The types of alpha-factor fragments that can be employed include the full-length pre-pro alpha factor leader (about 83 amino acid residues) as well as truncated alpha-factor leaders (usually about 25 to about 50 amino acid residues) (U.S. Patent Nos. 4,546,083 and 4,870,008; EPO Publ.

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No. 324 274). Additional leaders employing an alpha-factor leader fragment that provides for secretion include hybrid alpha-factor leaders made with a presequence of a first yeast, but a pro-region from a second yeast alpha factor. (See e.g., PCT Publ. No. WO 89/02463.)

Usually, transcription termination sequences recognized by yeast are regulatory regions located 3' to the translation stop codon, and thus together with the promoter flank the coding sequence. These sequences direct the transcription of an mRNA which can be translated into the polypeptide encoded by the DNA. Examples of transcription terminator sequence and other yeast-recognized termination sequences, such as those coding for glycolytic enzymes.

Usually, the above described components, comprising a promoter, leader (if desired), coding sequence of interest, and transcription termination sequence, are put together into expression constructs. Expression constructs are often maintained in a replicon, such as an extrachromosomal element (e.g., plasmids) capable of stable maintenance in a host, such as yeast or bacteria. The replicon may have two replication systems, thus allowing it to be maintained, for example, in yeast for expression and in a prokaryotic host for cloning and amplification. Examples of such yeast-bacteria shuttle vectors include YEp24 (Botstein *et al.* (1979) *Gene* 8:17-24), pCl/1 (Brake *et al.* (1984) *Proc. Natl. Acad. Sci USA* 81:4642-4646), and YRp17 (Stinchcomb *et al.* (1982) *J. Mol. Biol.* 158:157). In addition, a replicon may be either a high or low copy number plasmid. A high copy number plasmid will generally have a copy number ranging from about 5 to about 200, and usually about 10 to about 150. A host containing a high copy number plasmid will preferably have at least about 10, and more preferably at least about 20. Either a high or low copy number vector may be selected, depending upon the effect of the vector and the foreign protein on the host. See e.g., Brake *et al.*, *supra*.

Alternatively, the expression constructs can be integrated into the yeast genome with an integrating vector. Integrating vectors usually contain at least one sequence homologous to a yeast chromosome that allows the vector to integrate, and preferably contain two homologous sequences flanking the expression construct. Integrations appear to result from recombinations between homologous DNA in the vector and the yeast chromosome (Orr-Weaver *et al.* (1983) *Methods in Enzymol.* 101:228-245). An integrating vector may be directed to a specific locus in yeast by selecting the appropriate homologous sequence for

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inclusion in the vector. See Orr-Weaver *et al.*, *supra*. One or more expression construct may integrate, possibly affecting levels of recombinant protein produced (Rine *et al.* (1983) *Proc. Natl. Acad. Sci. USA* 80:6750). The chromosomal sequences included in the vector can occur either as a single segment in the vector, which results in the integration of the entire vector, or
5 two segments homologous to adjacent segments in the chromosome and flanking the expression construct in the vector, which can result in the stable integration of only the expression construct.

Usually, extrachromosomal and integrating expression constructs may contain selectable markers to allow for the selection of yeast strains that have been transformed.
10 Selectable markers may include biosynthetic genes that can be expressed in the yeast host, such as *ADE2*, *HIS4*, *LEU2*, *TRP1*, and *ALG7*, and the G418 resistance gene, which confer resistance in yeast cells to tunicamycin and G418, respectively. In addition, a suitable selectable marker may also provide yeast with the ability to grow in the presence of toxic compounds, such as metal. For example, the presence of *CUP1* allows yeast to grow in the
15 presence of copper ions (Butt *et al.* (1987) *Microbiol. Rev.* 51:351).

Alternatively, some of the above described components can be put together into transformation vectors. Transformation vectors are usually comprised of a selectable marker that is either maintained in a replicon or developed into an integrating vector, as described above.

20 Expression and transformation vectors, either extrachromosomal replicons or integrating vectors, have been developed for transformation into many yeasts. For example, expression vectors and methods of introducing exogenous DNA into yeast hosts have been developed for, *inter alia*, the following yeasts: *Candida albicans* (Kurtz, *et al.* (1986) *Mol. Cell. Biol.* 6:142); *Candida maltosa* (Kunze, *et al.* (1985) *J. Basic Microbiol.* 25:141);
25 *Hansenula polymorpha* (Gleeson, *et al.* (1986) *J. Gen. Microbiol.* 132:3459; Roggenkamp *et al.* (1986) *Mol. Gen. Genet.* 202:302); *Kluyveromyces fragilis* (Das, *et al.* (1984) *J. Bacteriol.* 158:1165); *Kluyveromyces lactis* (De Louvencourt *et al.* (1983) *J. Bacteriol.* 154:737; Van den Berg *et al.* (1990) *Bio/Technology* 8:135); *Pichia guillermondii* (Kunze *et al.* (1985) *J. Basic Microbiol.* 25:141); *Pichia pastoris* (Cregg, *et al.* (1985) *Mol. Cell. Biol.* 5:3376; U.S.
30 Patent Nos. 4,837,148 and 4,929,555); *Saccharomyces cerevisiae* (Hinnen *et al.* (1978) *Proc. Natl. Acad. Sci. USA* 75:1929; Ito *et al.* (1983) *J. Bacteriol.* 153:163); *Schizosaccharomyces*

pombe (Beach and Nurse (1981) *Nature* 300:706); and *Yarrowia lipolytica* (Davidow, *et al.* (1985) *Curr. Genet.* 10:380471 Gaillardin, *et al.* (1985) *Curr. Genet.* 10:49).

Methods of introducing exogenous DNA into yeast hosts are well-known in the art, and usually include either the transformation of spheroplasts or of intact yeast cells treated with alkali cations. Transformation procedures usually vary with the yeast species to be transformed. See e.g., [Kurtz *et al.* (1986) *Mol. Cell. Biol.* 6:142; Kunze *et al.* (1985) *J. Basic Microbiol.* 25:141; *Candida*]; [Gleeson *et al.* (1986) *J. Gen. Microbiol.* 132:3459; Roggenkamp *et al.* (1986) *Mol. Gen. Genet.* 202:302; Hansenula]; [Das *et al.* (1984) *J. Bacteriol.* 158:1165; De Louvencourt *et al.* (1983) *J. Bacteriol.* 154:1165; Van den Berg *et al.* (1990) *Bio/Technology* 8:135; *Kluyveromyces*]; [Cregg *et al.* (1985) *Mol. Cell. Biol.* 5:3376; Kunze *et al.* (1985) *J. Basic Microbiol.* 25:141; U.S. Patent Nos. 4,837,148 and 4,929,555; *Pichia*]; [Hinnen *et al.* (1978) *Proc. Natl. Acad. Sci. USA* 75:1929; Ito *et al.* (1983) *J. Bacteriol.* 153:163 *Saccharomyces*]; [Beach and Nurse (1981) *Nature* 300:706; *Schizosaccharomyces*]; [Davidow *et al.* (1985) *Curr. Genet.* 10:39; Gaillardin *et al.* (1985) *Curr. Genet.* 10:49; *Yarrowia*].

Definitions

A composition containing X is "substantially free of" Y when at least 85% by weight of the total X+Y in the composition is X. Preferably, X comprises at least about 90% by weight of the total of X+Y in the composition, more preferably at least about 95% or even 99% by weight.

The term "heterologous" refers to two biological components that are not found together in nature. The components may be host cells, genes, or regulatory regions, such as promoters. Although the heterologous components are not found together in nature, they can function together, as when a promoter heterologous to a gene is operably linked to the gene. Another example is where a Neisserial sequence is heterologous to a mouse host cell.

An "origin of replication" is a polynucleotide sequence that initiates and regulates replication of polynucleotides, such as an expression vector. The origin of replication behaves as an autonomous unit of polynucleotide replication within a cell, capable of replication under its own control. An origin of replication may be needed for a vector to replicate in a particular host cell. With certain origins of replication, an expression vector can be

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reproduced at a high copy number in the presence of the appropriate proteins within the cell. Examples of origins are the autonomously replicating sequences, which are effective in yeast; and the viral T-antigen, effective in COS-7 cells.

A "mutant" sequence is defined as a DNA, RNA or amino acid sequence differing
5 from but having homology with the native or disclosed sequence. Depending on the particular sequence, the degree of homology between the native or disclosed sequence and the mutant sequence is preferably greater than 50% (e.g., 60%, 70%, 80%, 90%, 95%, 99% or more) which is calculated as described above. As used herein, an "allelic variant" of a nucleic acid molecule, or region, for which nucleic acid sequence is provided herein is a
10 nucleic acid molecule, or region, that occurs at essentially the same locus in the genome of another or second isolate, and that, due to natural variation caused by, for example, mutation or recombination, has a similar but not identical nucleic acid sequence. A coding region allelic variant typically encodes a protein having similar activity to that of the protein encoded by the gene to which it is being compared. An allelic variant can also comprise an
15 alteration in the 5' or 3' untranslated regions of the gene, such as in regulatory control regions. (see, for example, U.S. Patent 5,753,235).

Antibodies

As used herein, the term "antibody" refers to a polypeptide or group of polypeptides
20 composed of at least one antibody combining site. An "antibody combining site" is the three-dimensional binding space with an internal surface shape and charge distribution complementary to the features of an epitope of an antigen, which allows a binding of the antibody with the antigen. "Antibody" includes, for example, vertebrate antibodies, hybrid antibodies, chimeric antibodies, humanized antibodies, altered antibodies, univalent
25 antibodies, Fab proteins, and single domain antibodies.

Antibodies against the proteins of the invention are useful for affinity chromatography, immunoassays, and distinguishing/identifying *Neisseria* MenB proteins. Antibodies elicited against the proteins of the present invention bind to antigenic polypeptides or proteins or protein fragments that are present and specifically associated with
30 strains of *Neisseria meningitidis* MenB. In some instances, these antigens may be associated with specific strains, such as those antigens specific for the MenB strains. The antibodies of

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the invention may be immobilized to a matrix and utilized in an immunoassay or on an affinity chromatography column, to enable the detection and/or separation of polypeptides, proteins or protein fragments or cells comprising such polypeptides, proteins or protein fragments. Alternatively, such polypeptides, proteins or protein fragments may be
5 immobilized so as to detect antibodies bindably specific thereto.

Antibodies to the proteins of the invention, both polyclonal and monoclonal, may be prepared by conventional methods. In general, the protein is first used to immunize a suitable animal, preferably a mouse, rat, rabbit or goat. Rabbits and goats are preferred for the preparation of polyclonal sera due to the volume of serum obtainable, and the availability of
10 labeled anti-rabbit and anti-goat antibodies. Immunization is generally performed by mixing or emulsifying the protein in saline, preferably in an adjuvant such as Freund's complete adjuvant, and injecting the mixture or emulsion parenterally (generally subcutaneously or intramuscularly). A dose of 50-200 µg/injection is typically sufficient. Immunization is generally boosted 2-6 weeks later with one or more injections of the protein in saline,
15 preferably using Freund's incomplete adjuvant. One may alternatively generate antibodies by *in vitro* immunization using methods known in the art, which for the purposes of this invention is considered equivalent to *in vivo* immunization. Polyclonal antisera is obtained by bleeding the immunized animal into a glass or plastic container, incubating the blood at 25°C for one hour, followed by incubating at 4°C for 2-18 hours. The serum is recovered by
20 centrifugation (e.g., 1,000g for 10 minutes). About 20-50 ml per bleed may be obtained from rabbits.

Monoclonal antibodies are prepared using the standard method of Kohler & Milstein (*Nature* (1975) 256:495-96), or a modification thereof. Typically, a mouse or rat is immunized as described above. However, rather than bleeding the animal to extract serum,
25 the spleen (and optionally several large lymph nodes) is removed and dissociated into single cells. If desired, the spleen cells may be screened (after removal of nonspecifically adherent cells) by applying a cell suspension to a plate or well coated with the protein antigen. B-cells that express membrane-bound immunoglobulin specific for the antigen bind to the plate, and are not rinsed away with the rest of the suspension. Resulting B-cells, or all dissociated
30 spleen cells, are then induced to fuse with myeloma cells to form hybridomas, and are cultured in a selective medium (e.g., hypoxanthine, aminopterin, thymidine medium,

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“HAT”). The resulting hybridomas are plated by limiting dilution, and are assayed for the production of antibodies which bind specifically to the immunizing antigen (and which do not bind to unrelated antigens). The selected MAb-secreting hybridomas are then cultured either *in vitro* (e.g., in tissue culture bottles or hollow fiber reactors), or *in vivo* (as ascites in mice).

If desired, the antibodies (whether polyclonal or monoclonal) may be labeled using conventional techniques. Suitable labels include fluorophores, chromophores, radioactive atoms (particularly ^{32}P and ^{125}I), electron-dense reagents, enzymes, and ligands having specific binding partners. Enzymes are typically detected by their activity. For example, horseradish peroxidase is usually detected by its ability to convert 3,3',5,5'-tetramethylbenzidine (TMB) to a blue pigment, quantifiable with a spectrophotometer. “Specific binding partner” refers to a protein capable of binding a ligand molecule with high specificity, as for example in the case of an antigen and a monoclonal antibody specific therefor. Other specific binding partners include biotin and avidin or streptavidin, IgG and protein A, and the numerous receptor-ligand couples known in the art. It should be understood that the above description is not meant to categorize the various labels into distinct classes, as the same label may serve in several different modes. For example, ^{125}I may serve as a radioactive label or as an electron-dense reagent. HRP may serve as enzyme or as antigen for a MAb. Further, one may combine various labels for desired effect. For example, MAbs and avidin also require labels in the practice of this invention: thus, one might label a MAb with biotin, and detect its presence with avidin labeled with ^{125}I , or with an anti-biotin MAb labeled with HRP. Other permutations and possibilities will be readily apparent to those of ordinary skill in the art, and are considered as equivalents within the scope of the instant invention.

Antigens, immunogens, polypeptides, proteins or protein fragments of the present invention elicit formation of specific binding partner antibodies. These antigens, immunogens, polypeptides, proteins or protein fragments of the present invention comprise immunogenic compositions of the present invention. Such immunogenic compositions may further comprise or include adjuvants, carriers, or other compositions that promote or enhance or stabilize the antigens, polypeptides, proteins or protein fragments of the present

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invention. Such adjuvants and carriers will be readily apparent to those of ordinary skill in the art.

Pharmaceutical Compositions

5 Pharmaceutical compositions can include either polypeptides, antibodies, or nucleic acid of the invention. The pharmaceutical compositions will comprise a therapeutically effective amount of either polypeptides, antibodies, or polynucleotides of the claimed invention.

 The term "therapeutically effective amount" as used herein refers to an amount of a
10 therapeutic agent to treat, ameliorate, or prevent a desired disease or condition, or to exhibit a detectable therapeutic or preventative effect. The effect can be detected by, for example, chemical markers or antigen levels. Therapeutic effects also include reduction in physical symptoms, such as decreased body temperature, when given to a patient that is febrile. The precise effective amount for a subject will depend upon the subject's size and health, the
15 nature and extent of the condition, and the therapeutics or combination of therapeutics selected for administration. Thus, it is not useful to specify an exact effective amount in advance. However, the effective amount for a given situation can be determined by routine experimentation and is within the judgment of the clinician.

 For purposes of the present invention, an effective dose will be from about 0.01 mg/
20 kg to 50 mg/kg or 0.05 mg/kg to about 10 mg/kg of the DNA constructs in the individual to which it is administered.

 A pharmaceutical composition can also contain a pharmaceutically acceptable carrier. The term "pharmaceutically acceptable carrier" refers to a carrier for administration of a therapeutic agent, such as antibodies or a polypeptide, genes, and other therapeutic agents.
25 The term refers to any pharmaceutical carrier that does not itself induce the production of antibodies harmful to the individual receiving the composition, and which may be administered without undue toxicity. Suitable carriers may be large, slowly metabolized macromolecules such as proteins, polysaccharides, polylactic acids, polyglycolic acids, polymeric amino acids, amino acid copolymers, and inactive virus particles. Such carriers are
30 well known to those of ordinary skill in the art.

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Pharmaceutically acceptable salts can be used therein, for example, mineral acid salts such as hydrochlorides, hydrobromides, phosphates, sulfates, and the like; and the salts of organic acids such as acetates, propionates, malonates, benzoates, and the like. A thorough discussion of pharmaceutically acceptable excipients is available in Remington's
5 Pharmaceutical Sciences (Mack Pub. Co., N.J. 1991).

Pharmaceutically acceptable carriers in therapeutic compositions may contain liquids such as water, saline, glycerol and ethanol. Additionally, auxiliary substances, such as wetting or emulsifying agents, pH buffering substances, and the like, may be present in such vehicles. Typically, the therapeutic compositions are prepared as injectables, either as liquid
10 solutions or suspensions; solid forms suitable for solution in, or suspension in, liquid vehicles prior to injection may also be prepared. Liposomes are included within the definition of a pharmaceutically acceptable carrier.

Delivery Methods

15 Once formulated, the compositions of the invention can be administered directly to the subject. The subjects to be treated can be animals; in particular, human subjects can be treated.

Direct delivery of the compositions will generally be accomplished by injection, either subcutaneously, intraperitoneally, intravenously or intramuscularly or delivered to the
20 interstitial space of a tissue. The compositions can also be administered into a lesion. Other modes of administration include oral and pulmonary administration, suppositories, and transdermal and transcutaneous applications, needles, and gene guns or hyposprays. Dosage treatment may be a single dose schedule or a multiple dose schedule.

25 Vaccines

Vaccines according to the invention may either be prophylactic (i.e., to prevent infection) or therapeutic (i.e., to treat disease after infection).

Such vaccines comprise immunizing antigen(s) or immunogen(s), immunogenic polypeptide, protein(s) or protein fragments, or nucleic acids (e.g., ribonucleic acid or
30 deoxyribonucleic acid), usually in combination with "pharmaceutically acceptable carriers," which include any carrier that does not itself induce the production of antibodies harmful to

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the individual receiving the composition. Suitable carriers are typically large, slowly metabolized macromolecules such as proteins, polysaccharides, polylactic acids, polyglycolic acids, polymeric amino acids, amino acid copolymers, lipid aggregates (such as oil droplets or liposomes), and inactive virus particles. Such carriers are well known to those of ordinary skill in the art. Additionally, these carriers may function as immunostimulating agents ("adjuvants"). Furthermore, the immunogen or antigen may be conjugated to a bacterial toxoid, such as a toxoid from diphtheria, tetanus, cholera, *H. pylori*, etc. pathogens.

Preferred adjuvants to enhance effectiveness of the composition include, but are not limited to: (1) aluminum salts (alum), such as aluminum hydroxide, aluminum phosphate, aluminum sulfate, etc; (2) oil-in-water emulsion formulations (with or without other specific immunostimulating agents such as muramyl peptides (see below) or bacterial cell wall components), such as for example (a) MF59 (PCT Publ. No. WO 90/14837), containing 5% Squalene, 0.5% Tween 80, and 0.5% Span 85 (optionally containing various amounts of MTP-PE (see below), although not required) formulated into submicron particles using a microfluidizer such as Model 110Y microfluidizer (Microfluidics, Newton, MA), (b) SAF, containing 10% Squalene, 0.4% Tween 80, 5% pluronic-blocked polymer L121, and th-MDP (see below) either microfluidized into a submicron emulsion or vortexed to generate a larger particle size emulsion, and (c) RibiTM adjuvant system (RAS), (Ribi Immunochem, Hamilton, MT) containing 2% Squalene, 0.2% Tween 80, and one or more bacterial cell wall components from the group consisting of monophosphorylipid A (MPL), trehalose dimycolate (TDM), and cell wall skeleton (CWS), preferably MPL + CWS (DetoxTM); (3) saponin adjuvants, such as StimulonTM (Cambridge Bioscience, Worcester, MA) may be used or particles generated therefrom such as ISCOMs (immunostimulating complexes); (4) Complete Freund's Adjuvant (CFA) and Incomplete Freund's Adjuvant (IFA); (5) cytokines, such as interleukins (e.g., IL-1, IL-2, IL-4, IL-5, IL-6, IL-7, IL-12, etc.), interferons (e.g., gamma interferon), macrophage colony stimulating factor (M-CSF), tumor necrosis factor (TNF), etc; (6) detoxified mutants of a bacterial ADP-ribosylating toxin such as a cholera toxin (CT), a pertussis toxin (PT), or an *E. coli* heat-labile toxin (LT), particularly LT-K63, LT-R72, CT-S109, PT-K9/G129; see, e.g., WO 93/13302 and WO 92/19265; and (7) other substances that act as immunostimulating agents to enhance the effectiveness of the composition. Alum and MF59 are preferred.

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As mentioned above, muramyl peptides include, but are not limited to, N-acetyl-muramyl-L-threonyl-D-isoglutamine (thr-MDP), N-acetyl-normuramyl-L-alanyl-D-isoglutamine (nor-MDP), N-acetylmuramyl-L-alanyl-D-isoglutaminyl-L-alanine-2-(1'-2'-dipalmitoyl-*sn*-glycero-3-hydroxyphosphoryloxy)-ethylamine (MTP-PE), *etc.*

5 The vaccine compositions comprising immunogenic compositions (e.g., which may include the antigen, pharmaceutically acceptable carrier, and adjuvant) typically will contain diluents, such as water, saline, glycerol, ethanol, *etc.* Additionally, auxiliary substances, such as wetting or emulsifying agents, pH buffering substances, and the like, may be present in such vehicles. Alternatively, vaccine compositions comprising immunogenic compositions
10 may comprise an antigen, polypeptide, protein, protein fragment or nucleic acid in a pharmaceutically acceptable carrier.

More specifically, vaccines comprising immunogenic compositions comprise an immunologically effective amount of the immunogenic polypeptides, as well as any other of the above-mentioned components, as needed. By "immunologically effective amount", it is
15 meant that the administration of that amount to an individual, either in a single dose or as part of a series, is effective for treatment or prevention. This amount varies depending upon the health and physical condition of the individual to be treated, the taxonomic group of individual to be treated (e.g., nonhuman primate, primate, *etc.*), the capacity of the individual's immune system to synthesize antibodies, the degree of protection desired, the
20 formulation of the vaccine, the treating doctor's assessment of the medical situation, and other relevant factors. It is expected that the amount will fall in a relatively broad range that can be determined through routine trials.

Typically, the vaccine compositions or immunogenic compositions are prepared as injectables, either as liquid solutions or suspensions; solid forms suitable for solution in, or
25 suspension in, liquid vehicles prior to injection may also be prepared. The preparation also may be emulsified or encapsulated in liposomes for enhanced adjuvant effect, as discussed above under pharmaceutically acceptable carriers.

The immunogenic compositions are conventionally administered parenterally, e.g., by injection, either subcutaneously or intramuscularly. Additional formulations suitable for
30 other modes of administration include oral and pulmonary formulations, suppositories, and transdermal and transcutaneous applications. Dosage treatment may be a single dose schedule

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or a multiple dose schedule. The vaccine may be administered in conjunction with other immunoregulatory agents.

As an alternative to protein-based vaccines, DNA vaccination may be employed (e.g., Robinsen & Torres (1997) *Seminars in Immunology* 9:271-283; Donnelly *et al.* (1997) *Annu*
5 *Rev Immunol* 15:617-648).

Gene Delivery Vehicles

Gene therapy vehicles for delivery of constructs, including a coding sequence of a therapeutic of the invention, to be delivered to the mammal for expression in the mammal,
10 can be administered either locally or systemically. These constructs can utilize viral or non-viral vector approaches in *in vivo* or *ex vivo* modality. Expression of such coding sequence can be induced using endogenous mammalian or heterologous promoters. Expression of the coding sequence *in vivo* can be either constitutive or regulated.

The invention includes gene delivery vehicles capable of expressing the contemplated
15 nucleic acid sequences. The gene delivery vehicle is preferably a viral vector and, more preferably, a retroviral, adenoviral, adeno-associated viral (AAV), herpes viral, or alphavirus vector. The viral vector can also be an astrovirus, coronavirus, orthomyxovirus, papovavirus, paramyxovirus, parvovirus, picornavirus, poxvirus, or togavirus viral vector. See generally, Jolly (1994) *Cancer Gene Therapy* 1:51-64; Kimura (1994) *Human Gene Therapy*
20 5:845-852; Connelly (1995) *Human Gene Therapy* 6:185-193; and Kaplitt (1994) *Nature Genetics* 6:148-153.

Retroviral vectors are well known in the art, including B, C and D type retroviruses, xenotropic retroviruses (for example, NZB-X1, NZB-X2 and NZB9-1 (see O'Neill (1985) *J. Virol.* 53:160) polytropic retroviruses e.g., MCF and MCF-MLV (see Kelly (1983) *J. Virol.*
25 45:291), spumaviruses and lentiviruses. See RNA Tumor Viruses, Second Edition, Cold Spring Harbor Laboratory, 1985.

Portions of the retroviral gene therapy vector may be derived from different retroviruses. For example, retrovector LTRs may be derived from a Murine Sarcoma Virus, a tRNA binding site from a Rous Sarcoma Virus, a packaging signal from a Murine Leukemia
30 Virus, and an origin of second strand synthesis from an Avian Leukosis Virus.

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These recombinant retroviral vectors may be used to generate transduction competent retroviral vector particles by introducing them into appropriate packaging cell lines (see US patent 5,591,624). Retrovirus vectors can be constructed for site-specific integration into host cell DNA by incorporation of a chimeric integrase enzyme into the retroviral particle (see
5 WO96/37626). It is preferable that the recombinant viral vector is a replication defective recombinant virus.

Packaging cell lines suitable for use with the above-described retrovirus vectors are well known in the art, are readily prepared (see WO95/30763 and WO92/05266), and can be used to create producer cell lines (also termed vector cell lines or "VCLs") for the production
10 of recombinant vector particles. Preferably, the packaging cell lines are made from human parent cells (e.g., HT1080 cells) or mink parent cell lines, which eliminates inactivation in human serum.

Preferred retroviruses for the construction of retroviral gene therapy vectors include Avian Leukosis Virus, Bovine Leukemia Virus, Murine Leukemia Virus, Mink-Cell
15 Focus-Inducing Virus, Murine Sarcoma Virus, Reticuloendotheliosis Virus and Rous Sarcoma Virus. Particularly preferred Murine Leukemia Viruses include 4070A and 1504A (Hartley and Rowe (1976) *J Virol* 19:19-25), Abelson (ATCC No. VR-999), Friend (ATCC No. VR-245), Graffi, Gross (ATCC No. VR-590), Kirsten, Harvey Sarcoma Virus and Rauscher (ATCC No. VR-998) and Moloney Murine Leukemia Virus (ATCC No. VR-190).
20 Such retroviruses may be obtained from depositories or collections such as the American Type Culture Collection ("ATCC") in Rockville, Maryland or isolated from known sources using commonly available techniques.

Exemplary known retroviral gene therapy vectors employable in this invention include those described in patent applications GB2200651, EP0415731, EP0345242,
25 EP0334301, WO89/02468; WO89/05349, WO89/09271, WO90/02806, WO90/07936, WO94/03622, WO93/25698, WO93/25234, WO93/11230, WO93/10218, WO91/02805, WO91/02825, WO95/07994, US 5,219,740, US 4,405,712, US 4,861,719, US 4,980,289, US 4,777,127, US 5,591,624. See also Vile (1993) *Cancer Res* 53:3860-3864; Vile (1993) *Cancer Res* 53:962-967; Ram (1993) *Cancer Res* 53 (1993) 83-88; Takamiya (1992) *J Neurosci Res* 33:493-503; Baba (1993) *J Neurosurg* 79:729-735; Mann (1983) *Cell* 33:153; Cane (1984) *Proc Natl Acad Sci* 81:6349; and Miller (1990) *Human Gene Therapy* 1.

Human adenoviral gene therapy vectors are also known in the art and employable in this invention. See, for example, Berkner (1988) *Biotechniques* 6:616 and Rosenfeld (1991) *Science* 252:431, and WO93/07283, WO93/06223, and WO93/07282. Exemplary known adenoviral gene therapy vectors employable in this invention include those described in the

5 above referenced documents and in WO94/12649, WO93/03769, WO93/19191, WO94/28938, WO95/11984, WO95/00655, WO95/27071, WO95/29993, WO95/34671, WO96/05320, WO94/08026, WO94/11506, WO93/06223, WO94/24299, WO95/14102, WO95/24297, WO95/02697, WO94/28152, WO94/24299, WO95/09241, WO95/25807, WO95/05835, WO94/18922 and WO95/09654. Alternatively, administration of DNA linked

10 to killed adenovirus as described in Curiel (1992) *Hum. Gene Ther.* 3:147-154 may be employed. The gene delivery vehicles of the invention also include adenovirus associated virus (AAV) vectors. Leading and preferred examples of such vectors for use in this invention are the AAV-2 based vectors disclosed in Srivastava, WO93/09239. Most preferred AAV vectors comprise the two AAV inverted terminal repeats in which the native

15 D-sequences are modified by substitution of nucleotides, such that at least 5 native nucleotides and up to 18 native nucleotides, preferably at least 10 native nucleotides up to 18 native nucleotides, most preferably 10 native nucleotides are retained and the remaining nucleotides of the D-sequence are deleted or replaced with non-native nucleotides. The native D-sequences of the AAV inverted terminal repeats are sequences of 20 consecutive

20 nucleotides in each AAV inverted terminal repeat (i.e., there is one sequence at each end) which are not involved in HP formation. The non-native replacement nucleotide may be any nucleotide other than the nucleotide found in the native D-sequence in the same position. Other employable exemplary AAV vectors are pWP-19, pWN-1, both of which are disclosed in Nahreini (1993) *Gene* 124:257-262. Another example of such an AAV vector is psub201

25 (see Samulski (1987) *J. Virol.* 61:3096). Another exemplary AAV vector is the Double-D ITR vector. Construction of the Double-D ITR vector is disclosed in US Patent 5,478,745. Still other vectors are those disclosed in Carter US Patent 4,797,368 and Muzyczka US Patent 5,139,941, Chartejee US Patent 5,474,935, and Kotin WO94/288157. Yet a further example of an AAV vector employable in this invention is SSV9AFABTKneo, which contains the

30 AFP enhancer and albumin promoter and directs expression predominantly in the liver. Its structure and construction are disclosed in Su (1996) *Human Gene Therapy* 7:463-470.

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Additional AAV gene therapy vectors are described in US 5,354,678, US 5,173,414, US 5,139,941, and US 5,252,479.

The gene therapy vectors comprising sequences of the invention also include herpes vectors. Leading and preferred examples are herpes simplex virus vectors containing a
5 sequence encoding a thymidine kinase polypeptide such as those disclosed in US 5,288,641 and EP0176170 (Roizman). Additional exemplary herpes simplex virus vectors include HFEM/ICP6-LacZ disclosed in WO95/04139 (Wistar Institute), pHSVlac described in Geller (1988) *Science* 241:1667-1669 and in WO90/09441 and WO92/07945, HSV Us3::pgC-lacZ described in Fink (1992) *Human Gene Therapy* 3:11-19 and HSV 7134, 2 RH 105 and GAL4
10 described in EP 0453242 (Breakefield), and those deposited with the ATCC as accession numbers ATCC VR-977 and ATCC VR-260.

Also contemplated are alpha virus gene therapy vectors that can be employed in this invention. Preferred alpha virus vectors are Sindbis viruses vectors. Togaviruses, Semliki Forest virus (ATCC VR-67; ATCC VR-1247), Middleberg virus (ATCC VR-370), Ross
15 River virus (ATCC VR-373; ATCC VR-1246), Venezuelan equine encephalitis virus (ATCC VR923; ATCC VR-1250; ATCC VR-1249; ATCC VR-532), and those described in US patents 5,091,309, 5,217,879, and WO92/10578. More particularly, those alpha virus vectors described in U.S. Serial No. 08/405,627, filed March 15, 1995, WO94/21792, WO92/10578, WO95/07994, US 5,091,309 and US 5,217,879 are employable. Such alpha viruses may be
20 obtained from depositories or collections such as the ATCC in Rockville, Maryland or isolated from known sources using commonly available techniques. Preferably, alphavirus vectors with reduced cytotoxicity are used (see USSN 08/679640).

DNA vector systems such as eukaryotic layered expression systems are also useful for expressing the nucleic acids of the invention. See WO95/07994 for a detailed description of
25 eukaryotic layered expression systems. Preferably, the eukaryotic layered expression systems of the invention are derived from alphavirus vectors and most preferably from Sindbis viral vectors.

Other viral vectors suitable for use in the present invention include those derived from poliovirus, for example ATCC VR-58 and those described in Evans, *Nature* 339 (1989) 385
30 and Sabin (1973) *J. Biol. Standardization* 1:115; rhinovirus, for example ATCC VR-1110 and those described in Arnold (1990) *J Cell Biochem* L401; pox viruses such as canary pox

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virus or vaccinia virus, for example ATCC VR-111 and ATCC VR-2010 and those described in Fisher-Hoch (1989) *Proc Natl Acad Sci* 86:317; Flexner (1989) *Ann NY Acad Sci* 569:86, Flexner (1990) *Vaccine* 8:17; in US 4,603,112 and US 4,769,330 and WO89/01973; SV40 virus, for example ATCC VR-305 and those described in Mulligan (1979) *Nature* 277:108 and Madzak (1992) *J Gen Virol* 73:1533; influenza virus, for example ATCC VR-797 and recombinant influenza viruses made employing reverse genetics techniques as described in US 5,166,057 and in Enami (1990) *Proc Natl Acad Sci* 87:3802-3805; Enami & Palese (1991) *J Virol* 65:2711-2713 and Luytjes (1989) *Cell* 59:110, (see also McMichael (1983) *NEJ Med* 309:13, and Yap (1978) *Nature* 273:238 and Nature (1979) 277:108); human immunodeficiency virus as described in EP-0386882 and in Buchschacher (1992) *J. Virol.* 66:2731; measles virus, for example ATCC VR-67 and VR-1247 and those described in EP-0440219; Aura virus, for example ATCC VR-368; Bebaru virus, for example ATCC VR-600 and ATCC VR-1240; Cabassou virus, for example ATCC VR-922; Chikungunya virus, for example ATCC VR-64 and ATCC VR-1241; Fort Morgan Virus, for example ATCC VR-924; Getah virus, for example ATCC VR-369 and ATCC VR-1243; Kyzylogach virus, for example ATCC VR-927; Mayaro virus, for example ATCC VR-66; Mucambo virus, for example ATCC VR-580 and ATCC VR-1244; Ndumu virus, for example ATCC VR-371; Pixuna virus, for example ATCC VR-372 and ATCC VR-1245; Tonate virus, for example ATCC VR-925; Trinit virus, for example ATCC VR-469; Una virus, for example ATCC VR-374; Whataroa virus, for example ATCC VR-926; Y-62-33 virus, for example ATCC VR-375; O'Nyong virus, Eastern encephalitis virus, for example ATCC VR-65 and ATCC VR-1242; Western encephalitis virus, for example ATCC VR-70, ATCC VR-1251, ATCC VR-622 and ATCC VR-1252; and coronavirus, for example ATCC VR-740 and those described in Hamre (1966) *Proc Soc Exp Biol Med* 121:190.

Delivery of the compositions of this invention into cells is not limited to the above mentioned viral vectors. Other delivery methods and media may be employed such as, for example, nucleic acid expression vectors, polycationic condensed DNA linked or unlinked to killed adenovirus alone, for example see US Serial No. 08/366,787, filed December 30, 1994 and Curiel (1992) *Hum Gene Ther* 3:147-154 ligand linked DNA, for example see Wu (1989) *J Biol Chem* 264:16985-16987, eucaryotic cell delivery vehicles cells, for example see US Serial No.08/240,030, filed May 9, 1994, and US Serial No. 08/404,796, deposition of

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photopolymerized hydrogel materials, hand-held gene transfer particle gun, as described in US Patent 5,149,655, ionizing radiation as described in US5,206,152 and in WO92/11033, nucleic charge neutralization or fusion with cell membranes. Additional approaches are described in Philip (1994) *Mol Cell Biol* 14:2411-2418 and in Woffendin (1994) *Proc Natl Acad Sci* 91:1581-1585.

Particle mediated gene transfer may be employed, for example see US Serial No. 60/023,867. Briefly, the sequence can be inserted into conventional vectors that contain conventional control sequences for high level expression, and then incubated with synthetic gene transfer molecules such as polymeric DNA-binding cations like polylysine, protamine, and albumin, linked to cell targeting ligands such as asialoorosomucoid, as described in Wu & Wu (1987) *J. Biol. Chem.* 262:4429-4432, insulin as described in Hucked (1990) *Biochem Pharmacol* 40:253-263, galactose as described in Plank (1992) *Bioconjugate Chem* 3:533-539, lactose or transferrin.

Naked DNA may also be employed to transform a host cell. Exemplary naked DNA introduction methods are described in WO 90/11092 and US 5,580,859. Uptake efficiency may be improved using biodegradable latex beads. DNA coated latex beads are efficiently transported into cells after endocytosis initiation by the beads. The method may be improved further by treatment of the beads to increase hydrophobicity and thereby facilitate disruption of the endosome and release of the DNA into the cytoplasm.

Liposomes that can act as gene delivery vehicles are described in U.S. 5,422,120, WO95/13796, WO94/23697, WO91/14445 and EP-524,968. As described in USSN. 60/023,867, on non-viral delivery, the nucleic acid sequences encoding a polypeptide can be inserted into conventional vectors that contain conventional control sequences for high level expression, and then be incubated with synthetic gene transfer molecules such as polymeric DNA-binding cations like polylysine, protamine, and albumin, linked to cell targeting ligands such as asialoorosomucoid, insulin, galactose, lactose, or transferrin. Other delivery systems include the use of liposomes to encapsulate DNA comprising the gene under the control of a variety of tissue-specific or ubiquitously-active promoters. Further non-viral delivery suitable for use includes mechanical delivery systems such as the approach described in Woffendin *et al* (1994) *Proc. Natl. Acad. Sci. USA* 91(24):11581-11585. Moreover, the coding sequence and the product of expression of such can be delivered through deposition of

photopolymerized hydrogel materials. Other conventional methods for gene delivery that can be used for delivery of the coding sequence include, for example, use of hand-held gene transfer particle gun, as described in U.S. 5,149,655; use of ionizing radiation for activating transferred gene, as described in U.S. 5,206,152 and WO92/11033

5 Exemplary liposome and polycationic gene delivery vehicles are those described in US 5,422,120 and 4,762,915; in WO 95/13796; WO94/23697; and WO91/14445; in EP-0524968; and in Stryer, *Biochemistry*, pages 236-240 (1975) W.H. Freeman, San Francisco; Szoka (1980) *Biochem Biophys Acta* 600:1; Bayer (1979) *Biochem Biophys Acta* 550:464; Rivnay (1987) *Meth Enzymol* 149:119; Wang (1987) *Proc Natl Acad Sci* 84:7851; Plant
10 (1989) *Anal Biochem* 176:420.

A polynucleotide composition can comprise a therapeutically effective amount of a gene therapy vehicle, as the term is defined above. For purposes of the present invention, an effective dose will be from about 0.01 mg/kg to 50 mg/kg or 0.05 mg/kg to about 10 mg/kg of the DNA constructs in the individual to which it is administered.

15

Delivery Methods

Once formulated, the polynucleotide compositions of the invention can be administered (1) directly to the subject; (2) delivered ex vivo, to cells derived from the subject; or (3) in vitro for expression of recombinant proteins. The subjects to be treated can
20 be mammals or birds. Also, human subjects can be treated.

Direct delivery of the compositions will generally be accomplished by injection, either subcutaneously, intraperitoneally, transdermally or transcutaneously, intravenously or intramuscularly or delivered to the interstitial space of a tissue. The compositions can also be administered into a tumor or lesion. Other modes of administration include oral and
25 pulmonary administration, suppositories, and transdermal applications, needles, and gene guns or hypodermic sprays. Dosage treatment may be a single dose schedule or a multiple dose schedule. See WO98/20734.

Methods for the ex vivo delivery and reimplantation of transformed cells into a subject are known in the art and described in e.g., WO93/14778. Examples of cells useful in ex vivo
30 applications include, for example, stem cells, particularly hematopoietic, lymph cells, macrophages, dendritic cells, or tumor cells.

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Generally, delivery of nucleic acids for both *ex vivo* and *in vitro* applications can be accomplished by the following procedures, for example, dextran-mediated transfection, calcium phosphate precipitation, polybrene mediated transfection, protoplast fusion, electroporation, encapsulation of the polynucleotide(s) in liposomes, and direct
5 microinjection of the DNA into nuclei, all well known in the art.

Polynucleotide and Polypeptide pharmaceutical compositions

In addition to the pharmaceutically acceptable carriers and salts described above, the following additional agents can be used with polynucleotide and/or polypeptide
10 compositions.

A. Polypeptides

One example are polypeptides which include, without limitation: asialoorosomucoid (ASOR); transferrin; asialoglycoproteins; antibodies; antibody fragments; ferritin;
15 interleukins; interferons, granulocyte, macrophage colony stimulating factor (GM-CSF), granulocyte colony stimulating factor (G-CSF), macrophage colony stimulating factor (M-CSF), stem cell factor and erythropoietin. Viral antigens, such as envelope proteins, can also be used. Also, proteins from other invasive organisms, such as the 17 amino acid peptide from the circumsporozoite protein of plasmodium falciparum known as RII.

20

B. Hormones, Vitamins, Etc.

Other groups that can be included in a pharmaceutical composition include, for example: hormones, steroids, androgens, estrogens, thyroid hormone, or vitamins, folic acid.

25 C. Polyalkylenes, Polysaccharides, etc.

Also, polyalkylene glycol can be included in a pharmaceutical compositions with the desired polynucleotides and/or polypeptides. In a preferred embodiment, the polyalkylene glycol is polyethylene glycol. In addition, mono-, di-, or polysaccharides can be included. In a preferred embodiment of this aspect, the polysaccharide is dextran or DEAE-dextran. Also,
30 chitosan and poly(lactide-co-glycolide) may be included in a pharmaceutical composition.

D. Lipids, and Liposomes

The desired polynucleotide or polypeptide can also be encapsulated in lipids or packaged in liposomes prior to delivery to the subject or to cells derived therefrom.

Lipid encapsulation is generally accomplished using liposomes which are able to stably bind or entrap and retain nucleic acid or polypeptide. The ratio of condensed polynucleotide to lipid preparation can vary but will generally be around 1:1 (mg DNA:micromoles lipid), or more of lipid. For a review of the use of liposomes as carriers for delivery of nucleic acids, see, Hug and Sleight (1991) *Biochim. Biophys. Acta.* 1097:1-17; Straubinger (1983) *Meth. Enzymol.* 101:512-527.

Liposomal preparations for use in the present invention include cationic (positively charged), anionic (negatively charged) and neutral preparations. Cationic liposomes have been shown to mediate intracellular delivery of plasmid DNA (Felgner (1987) *Proc. Natl. Acad. Sci. USA* 84:7413-7416); mRNA (Malone (1989) *Proc. Natl. Acad. Sci. USA* 86:6077-6081); and purified transcription factors (Debs (1990) *J. Biol. Chem.* 265:10189-10192), in functional form.

Cationic liposomes are readily available. For example, N(1-2,3-dioleoyloxy)propyl)-N,N,N-triethylammonium (DOTMA) liposomes are available under the trademark Lipofectin, from GIBCO BRL, Grand Island, NY. (See, also, Felgner *supra*). Other commercially available liposomes include transfectace (DDAB/DOPE) and DOTAP/DOPE (Boehringer). Other cationic liposomes can be prepared from readily available materials using techniques well known in the art. See, e.g., Szoka (1978) *Proc. Natl. Acad. Sci. USA* 75:4194-4198; WO90/11092 for a description of the synthesis of DOTAP (1,2-bis(oleoyloxy)-3-(trimethylammonio)propane) liposomes.

Similarly, anionic and neutral liposomes are readily available, such as from Avanti Polar Lipids (Birmingham, AL), or can be easily prepared using readily available materials. Such materials include phosphatidyl choline, cholesterol, phosphatidyl ethanolamine, dioleoylphosphatidyl choline (DOPC), dioleoylphosphatidyl glycerol (DOPG), dioleoylphosphatidyl ethanolamine (DOPE), among others. These materials can also be mixed with the DOTMA and DOTAP starting materials in appropriate ratios. Methods for making liposomes using these materials are well known in the art.

The liposomes can comprise multilammellar vesicles (MLVs), small unilamellar vesicles (SUVs), or large unilamellar vesicles (LUVs). The various liposome-nucleic acid complexes are prepared using methods known in the art. See e.g., Straubinger (1983) *Meth. Immunol.* 101:512-527; Szoka (1978) *Proc. Natl. Acad. Sci. USA* 75:4194-4198;

5 Papahadjopoulos (1975) *Biochim. Biophys. Acta* 394:483; Wilson (1979) *Cell* 17:77; Deamer & Bangham (1976) *Biochim. Biophys. Acta* 443:629; Ostro (1977) *Biochem. Biophys. Res. Commun.* 76:836; Fraley (1979) *Proc. Natl. Acad. Sci. USA* 76:3348; Enoch & Strittmatter (1979) *Proc. Natl. Acad. Sci. USA* 76:145; Fraley (1980) *J. Biol. Chem.* (1980) 255:10431; Szoka & Papahadjopoulos (1978) *Proc. Natl. Acad. Sci. USA* 75:145; and

10 Schaefer-Ridder (1982) *Science* 215:166.

E. Lipoproteins

In addition, lipoproteins can be included with the polynucleotide or polypeptide to be delivered. Examples of lipoproteins to be utilized include: chylomicrons, HDL, IDL, LDL,

15 and VLDL. Mutants, fragments, or fusions of these proteins can also be used. Also, modifications of naturally occurring lipoproteins can be used, such as acetylated LDL. These lipoproteins can target the delivery of polynucleotides to cells expressing lipoprotein receptors. Preferably, if lipoproteins are including with the polynucleotide to be delivered, no other targeting ligand is included in the composition.

20 Naturally occurring lipoproteins comprise a lipid and a protein portion. The protein portion are known as apoproteins. At the present, apoproteins A, B, C, D, and E have been isolated and identified. At least two of these contain several proteins, designated by Roman numerals, AI, AII, AIV; CI, CII, CIII.

A lipoprotein can comprise more than one apoprotein. For example, naturally

25 occurring chylomicrons comprises of A, B, C, and E, over time these lipoproteins lose A and acquire C and E apoproteins. VLDL comprises A, B, C, and E apoproteins, LDL comprises apoprotein B; and HDL comprises apoproteins A, C, and E.

The amino acid sequences of these apoproteins are known and are described in, for example, Breslow (1985) *Annu Rev. Biochem* 54:699; Law (1986) *Adv. Exp Med. Biol.*

30 151:162; Chen (1986) *J Biol Chem* 261:12918; Kane (1980) *Proc Natl Acad Sci USA* 77:2465; and Utermann (1984) *Hum Genet* 65:232.

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Lipoproteins contain a variety of lipids including, triglycerides, cholesterol (free and esters), and phospholipids. The composition of the lipids varies in naturally occurring lipoproteins. For example, chylomicrons comprise mainly triglycerides. A more detailed description of the lipid content of naturally occurring lipoproteins can be found, for example, 5 in *Meth. Enzymol.* 128 (1986). The composition of the lipids are chosen to aid in conformation of the apoprotein for receptor binding activity. The composition of lipids can also be chosen to facilitate hydrophobic interaction and association with the polynucleotide binding molecule.

Naturally occurring lipoproteins can be isolated from serum by ultracentrifugation, for 10 instance. Such methods are described in *Meth. Enzymol.* (*supra*); Pitas (1980) *J. Biochem.* 255:5454-5460 and Mahey (1979) *J Clin. Invest* 64:743-750.

Lipoproteins can also be produced by *in vitro* or recombinant methods by expression of the apoprotein genes in a desired host cell. See, for example, Atkinson (1986) *Annu Rev Biophys Chem* 15:403 and Radding (1958) *Biochim Biophys Acta* 30: 443.

15 Lipoproteins can also be purchased from commercial suppliers, such as Biomedical Technologies, Inc., Stoughton, Massachusetts, USA.

Further description of lipoproteins can be found in Zuckenmann et al., PCT. Appln. No. US97/14465.

20 F. Polycationic Agents

Polycationic agents can be included, with or without lipoprotein, in a composition with the desired polynucleotide and/or polypeptide to be delivered.

Polycationic agents, typically, exhibit a net positive charge at physiological relevant pH and are capable of neutralizing the electrical charge of nucleic acids to facilitate delivery 25 to a desired location. These agents have both *in vitro*, *ex vivo*, and *in vivo* applications. Polycationic agents can be used to deliver nucleic acids to a living subject either intramuscularly, subcutaneously, etc.

The following are examples of useful polypeptides as polycationic agents: polylysine, polyarginine, polyornithine, and protamine. Other examples of useful polypeptides include 30 histones, protamines, human serum albumin, DNA binding proteins, non-histone chromosomal proteins, coat proteins from DNA viruses, such as Φ X174, transcriptional

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factors also contain domains that bind DNA and therefore may be useful as nucleic acid condensing agents. Briefly, transcriptional factors such as C/CEBP, c-jun, c-fos, AP-1, AP-2, AP-3, CPF, Prot-1, Sp-1, Oct-1, Oct-2, CREP, and TFIID contain basic domains that bind DNA sequences.

5 Organic polycationic agents include: spermine, spermidine, and putrescine.

The dimensions and of the physical properties of a polycationic agent can be extrapolated from the list above, to construct other polypeptide polycationic agents or to produce synthetic polycationic agents.

10 G. Synthetic Polycationic Agents

Synthetic polycationic agents which are useful in pharmaceutical compositions include, for example, DEAE-dextran, polybrene. Lipofectin™, and lipofectAMINE™ are monomers that form polycationic complexes when combined with polynucleotides or polypeptides.

15

Immunodiagnostic Assays

Neisseria MenB antigens, or antigenic fragments thereof, of the invention can be used in immunoassays to detect antibody levels (or, conversely, anti-*Neisseria* MenB antibodies can be used to detect antigen levels). Immunoassays based on well defined, recombinant
20 antigens can be developed to replace invasive diagnostics methods. Antibodies to *Neisseria* MenB proteins or fragments thereof within biological samples, including for example, blood or serum samples, can be detected. Design of the immunoassays is subject to a great deal of variation, and a variety of these are known in the art. Protocols for the immunoassay may be based, for example, upon competition, or direct reaction, or sandwich type assays. Protocols
25 may also, for example, use solid supports, or may be by immunoprecipitation. Most assays involve the use of labeled antibody or polypeptide; the labels may be, for example, fluorescent, chemiluminescent, radioactive, or dye molecules. Assays which amplify the signals from the probe are also known; examples of which are assays which utilize biotin and avidin, and enzyme-labeled and mediated immunoassays, such as ELISA assays.

30 Kits suitable for immunodiagnosis and containing the appropriate labeled reagents are constructed by packaging the appropriate materials, including the compositions of the

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invention, in suitable containers, along with the remaining reagents and materials (for example, suitable buffers, salt solutions, *etc.*) required for the conduct of the assay, as well as suitable set of assay instructions.

5 Nucleic Acid Hybridization

“Hybridization” refers to the association of two nucleic acid sequences to one another by hydrogen bonding. Typically, one sequence will be fixed to a solid support and the other will be free in solution. Then, the two sequences will be placed in contact with one another under conditions that favor hydrogen bonding. Factors that affect this bonding include: the
10 type and volume of solvent; reaction temperature; time of hybridization; agitation; agents to block the non-specific attachment of the liquid phase sequence to the solid support (Denhardt's reagent or BLOTTO); concentration of the sequences; use of compounds to increase the rate of association of sequences (dextran sulfate or polyethylene glycol); and the stringency of the washing conditions following hybridization. See Sambrook *et al.* (*supra*)
15 Volume 2, chapter 9, pages 9.47 to 9.57.

“Stringency” refers to conditions in a hybridization reaction that favor association of very similar sequences over sequences that differ. For example, the combination of temperature and salt concentration should be chosen that is approximately 120 to 200°C below the calculated T_m of the hybrid under study. The temperature and salt conditions can
20 often be determined empirically in preliminary experiments in which samples of genomic DNA immobilized on filters are hybridized to the sequence of interest and then washed under conditions of different stringencies. See Sambrook *et al.* at page 9.50.

Variables to consider when performing, for example, a Southern blot are (1) the complexity of the DNA being blotted and (2) the homology between the probe and the
25 sequences being detected. The total amount of the fragment(s) to be studied can vary a magnitude of 10, from 0.1 to 1 μg for a plasmid or phage digest to 10^{-9} to 10^{-8} g for a single copy gene in a highly complex eukaryotic genome. For lower complexity polynucleotides, substantially shorter blotting, hybridization, and exposure times, a smaller amount of starting polynucleotides, and lower specific activity of probes can be used. For example, a
30 single-copy yeast gene can be detected with an exposure time of only 1 hour starting with 1 μg of yeast DNA, blotting for two hours, and hybridizing for 4-8 hours with a probe of 10^8

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cpm/ μ g. For a single-copy mammalian gene a conservative approach would start with 10 μ g of DNA, blot overnight, and hybridize overnight in the presence of 10% dextran sulfate using a probe of greater than 10^8 cpm/ μ g, resulting in an exposure time of ~24 hours.

- Several factors can affect the melting temperature (T_m) of a DNA-DNA hybrid
- 5 between the probe and the fragment of interest, and consequently, the appropriate conditions for hybridization and washing. In many cases the probe is not 100% homologous to the fragment. Other commonly encountered variables include the length and total G+C content of the hybridizing sequences and the ionic strength and formamide content of the hybridization buffer. The effects of all of these factors can be approximated by a single equation:
- 10 $T_m = 81 + 16.6(\log_{10} C_i) + 0.4\%(G + C) - 0.6\%(\text{formamide}) - 600/n - 1.5\%(\text{mismatch})$
- where C_i is the salt concentration (monovalent ions) and n is the length of the hybrid in base pairs (slightly modified from Meinkoth & Wahl (1984) *Anal. Biochem.* 138:267-284).

- In designing a hybridization experiment, some factors affecting nucleic acid hybridization can be conveniently altered. The temperature of the hybridization and washes
- 15 and the salt concentration during the washes are the simplest to adjust. As the temperature of the hybridization increases (i.e., stringency), it becomes less likely for hybridization to occur between strands that are nonhomologous, and as a result, background decreases. If the radiolabeled probe is not completely homologous with the immobilized fragment (as is frequently the case in gene family and interspecies hybridization experiments), the
- 20 hybridization temperature must be reduced, and background will increase. The temperature of the washes affects the intensity of the hybridizing band and the degree of background in a similar manner. The stringency of the washes is also increased with decreasing salt concentrations.

- In general, convenient hybridization temperatures in the presence of 50% formamide
- 25 are 42°C for a probe with is 95% to 100% homologous to the target fragment, 37°C for 90% to 95% homology, and 32°C for 85% to 90% homology. For lower homologies, formamide content should be lowered and temperature adjusted accordingly, using the equation above. If the homology between the probe and the target fragment are not known, the simplest approach is to start with both hybridization and wash conditions which are nonstringent. If
- 30 non-specific bands or high background are observed after autoradiography, the filter can be washed at high stringency and reexposed. If the time required for exposure makes this

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approach impractical, several hybridization and/or washing stringencies should be tested in parallel.

Nucleic Acid Probe Assays

5 Methods such as PCR, branched DNA probe assays, or blotting techniques utilizing nucleic acid probes according to the invention can determine the presence of cDNA or mRNA. A probe is said to "hybridize" with a sequence of the invention if it can form a duplex or double stranded complex, which is stable enough to be detected.

10 The nucleic acid probes will hybridize to the Neisserial nucleotide sequences of the invention (including both sense and antisense strands). Though many different nucleotide sequences will encode the amino acid sequence, the native Neisserial sequence is preferred because it is the actual sequence present in cells. mRNA represents a coding sequence and so a probe should be complementary to the coding sequence; single-stranded cDNA is complementary to mRNA, and so a cDNA probe should be complementary to the non-coding
15 sequence.

 The probe sequence need not be identical to the Neisserial sequence (or its complement) -- some variation in the sequence and length can lead to increased assay sensitivity if the nucleic acid probe can form a duplex with target nucleotides, which can be detected. Also, the nucleic acid probe can include additional nucleotides to stabilize the
20 formed duplex. Additional Neisserial sequence may also be helpful as a label to detect the formed duplex. For example, a non-complementary nucleotide sequence may be attached to the 5' end of the probe, with the remainder of the probe sequence being complementary to a Neisserial sequence. Alternatively, non-complementary bases or longer sequences can be interspersed into the probe, provided that the probe sequence has sufficient complementarity
25 with the a Neisserial sequence in order to hybridize therewith and thereby form a duplex which can be detected.

 The exact length and sequence of the probe will depend on the hybridization conditions, such as temperature, salt condition and the like. For example, for diagnostic applications, depending on the complexity of the analyte sequence, the nucleic acid probe
30 typically contains at least 10-20 nucleotides, preferably 15-25, and more preferably at least

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30 nucleotides, although it may be shorter than this. Short primers generally require cooler temperatures to form sufficiently stable hybrid complexes with the template.

Probes may be produced by synthetic procedures, such as the triester method of Matteucci *et al.* (*J. Am. Chem. Soc.* (1981) 103:3185), or according to Urdea *et al.* (*Proc. Natl. Acad. Sci. USA* (1983) 80: 7461), or using commercially available automated oligonucleotide synthesizers.

The chemical nature of the probe can be selected according to preference. For certain applications, DNA or RNA are appropriate. For other applications, modifications may be incorporated e.g., backbone modifications, such as phosphorothioates or methylphosphonates, can be used to increase *in vivo* half-life, alter RNA affinity, increase nuclease resistance *etc.* (e.g., see Agrawal & Iyer (1995) *Curr Opin Biotechnol* 6:12-19; Agrawal (1996) *TIBTECH* 14:376-387); analogues such as peptide nucleic acids may also be used (e.g., see Corey (1997) *TIBTECH* 15:224-229; Buchardt *et al.* (1993) *TIBTECH* 11:384-386).

One example of a nucleotide hybridization assay is described by Urdea *et al.* in international patent application WO92/02526 (see also U.S. Patent 5,124,246).

Alternatively, the polymerase chain reaction (PCR) is another well-known means for detecting small amounts of target nucleic acids. The assay is described in: Mullis *et al.* (*Meth. Enzymol.* (1987) 155: 335-350); US patent 4,683,195; and US patent 4,683,202. Two "primer" nucleotides hybridize with the target nucleic acids and are used to prime the reaction. The primers can comprise sequence that does not hybridize to the sequence of the amplification target (or its complement) to aid with duplex stability or, for example, to incorporate a convenient restriction site. Typically, such sequence will flank the desired Neisserial sequence.

A thermostable polymerase creates copies of target nucleic acids from the primers using the original target nucleic acids as a template. After a threshold amount of target nucleic acids are generated by the polymerase, they can be detected by more traditional methods, such as Southern blots. When using the Southern blot method, the labeled probe will hybridize to the Neisserial sequence (or its complement).

Also, mRNA or cDNA can be detected by traditional blotting techniques described in Sambrook *et al* (*supra*). mRNA, or cDNA generated from mRNA using a polymerase

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enzyme, can be purified and separated using gel electrophoresis. The nucleic acids on the gel are then blotted onto a solid support, such as nitrocellulose. The solid support is exposed to a labeled probe and then washed to remove any unhybridized probe. Next, the duplexes containing the labeled probe are detected. Typically, the probe is labeled with a radioactive moiety.

EXAMPLES

The invention is based on the 961 nucleotide sequences from the genome of *N. meningitidis* set out in Appendix C, SEQ ID NOs:1-961, which together represent substantially the complete genome of serotype B of *N. meningitidis*, as well as the full length genome sequence shown in Appendix D, SEQ ID NO 1068.

It will be self-evident to the skilled person how this sequence information can be utilized according to the invention, as above described.

The standard techniques and procedures which may be employed in order to perform the invention (e.g. to utilize the disclosed sequences to predict polypeptides useful for vaccination or diagnostic purposes) were summarized above. This summary is not a limitation on the invention but, rather, gives examples that may be used, but are not required.

These sequences are derived from contigs shown in Appendix C (SEQ ID NOs 1-961) and from the full length genome sequence shown in Appendix D (SEQ ID NO 1068), which were prepared during the sequencing of the genome of *N. meningitidis* (strain B). The full length sequence was assembled using the TIGR Assembler as described by G.S. Sutton et al., *TIGR Assembler: A New Tool for Assembling Large Shotgun Sequencing Projects*, Genome Science and Technology, 1:9-19 (1995) [see also R. D. Fleischmann, et al., Science 269, 496-512 (1995); C. M. Fraser, et al., Science 270, 397-403 (1995); C. J. Bult, et al., Science 273, 1058-73 (1996); C. M. Fraser, et. al, Nature 390, 580-586 (1997); J.-F. Tomb, et. al., Nature 388, 539-547 (1997); H. P. Klenk, et al., Nature 390, 364-70 (1997); C. M. Fraser, et al., Science 281, 375-88 (1998); M. J. Gardner, et al., Science 282, 1126-1132 (1998); K. E. Nelson, et al., Nature 399, 323-9 (1999)]. Then, using the above-described methods, putative translation products of the sequences were determined. Computer analysis of the translation products were determined based on database comparisons. Corresponding gene and protein sequences, if any, were identified in *Neisseria meningitidis* (Strain A) and *Neisseria*

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gonorrhoeae. Then the proteins were expressed, purified, and characterized to assess their antigenicity and immunogenicity.

In particular, the following methods were used to express, purify, and biochemically characterize the proteins of the invention.

5

Chromosomal DNA Preparation

N. meningitidis strain 2996 was grown to exponential phase in 100 ml of GC medium, harvested by centrifugation, and resuspended in 5 ml buffer (20% Sucrose, 50 mM Tris-HCl, 50 mM EDTA, adjusted to pH 8.0). After 10 minutes incubation on ice, the bacteria were
 10 lysed by adding 10 ml lysis solution (50 mM NaCl, 1% Na-Sarkosyl, 50 µg/ml Proteinase K), and the suspension was incubated at 37°C for 2 hours. Two phenol extractions (equilibrated to pH 8) and one CHCl_3 /isoamylalcohol (24:1) extraction were performed. DNA was precipitated by addition of 0.3M sodium acetate and 2 volumes ethanol, and was collected by centrifugation. The pellet was washed once with 70% ethanol and redissolved in 4 ml buffer
 15 (10 mM Tris-HCl, 1mM EDTA, pH 8). The DNA concentration was measured by reading the OD at 260 nm.

Oligonucleotide design

Synthetic oligonucleotide primers were designed on the basis of the coding sequence of each ORF, using (a) the meningococcus B sequence when available, or (b) the
 20 gonococcus/meningococcus A sequence, adapted to the codon preference usage of meningococcus. Any predicted signal peptides were omitted, by deducing the 5'-end amplification primer sequence immediately downstream from the predicted leader sequence.

For most ORFs, the 5' primers included two restriction enzyme recognition sites (*Bam*HI-*Nde*I, *Bam*HI-*Nhe*I, or *Eco*RI-*Nhe*I, depending on the gene's restriction pattern); the
 25 3' primers included a *Xho*I restriction site. This procedure was established in order to direct the cloning of each amplification product (corresponding to each ORF) into two different expression systems: pGEX-KG (using either *Bam*HI-*Xho*I or *Eco*RI-*Xho*I), and pET21b+ (using either *Nde*I-*Xho*I or *Nhe*I-*Xho*I).

5'-end primer tail: CGCGGATCCCATATG (*Bam*HI-*Nde*I)
 30 CGCGGATCCGCTAGC (*Bam*HI-*Nhe*I)

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CCGGAATTCTAGCTAGC (EcoRI-NheI)

3'-end primer tail: CCCGCTCGAG (XhoI)

For some ORFs, two different amplifications were performed to clone each ORF in the two expression systems. Two different 5' primers were used for each ORF; the same 3' XhoI primer was used as before:

5'-end primer tail: GGAATTCATATGGCCATGG (NdeI)

5'-end primer tail: CGGGATCC (BamHI)

Other ORFs were cloned in the pTRC expression vector and expressed as an amino-terminus His-tag fusion. The predicted signal peptide may be included in the final product. NheI-BamHI restriction sites were incorporated using primers:

5'-end primer tail: GATCAGCTAGCCATATG (NheI)

3'-end primer tail: CGGGATCC (BamHI)

As well as containing the restriction enzyme recognition sequences, the primers included nucleotides which hybridized to the sequence to be amplified. The number of hybridizing nucleotides depended on the melting temperature of the whole primer, and was determined for each primer using the formulae:

$$T_m = 4 (G+C) + 2 (A+T) \quad (\text{tail excluded})$$

$$T_m = 64.9 + 0.41 (\% \text{ GC}) - 600/N \quad (\text{whole primer})$$

The average melting temperature of the selected oligos were 65-70°C for the whole oligo and 50-55°C for the hybridising region alone.

Oligos were synthesized by a Perkin Elmer 394 DNA/RNA Synthesizer, eluted from the columns in 2 ml NH₄-OH, and deprotected by 5 hours incubation at 56 °C. The oligos were precipitated by addition of 0.3M Na-Acetate and 2 volumes ethanol. The samples were then centrifuged and the pellets resuspended in either 100µl or 1ml of water. OD₂₆₀ was determined using a Perkin Elmer Lambda Bio spectrophotometer and the concentration was determined and adjusted to 2-10 pmol/µl.

Table 1 shows the forward and reverse primers used for each amplification. In certain cases, it might be noted that the sequence of the primer does not exactly match the sequence in the ORF. When initial amplifications are performed, the complete 5' and/or 3' sequence

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may not be known for some meningococcal ORFs, although the corresponding sequences may have been identified in gonococcus. For amplification, the gonococcal sequences could thus be used as the basis for primer design, altered to take account of codon preference. In particular, the following codons may be changed: ATA→ATT; TCG→TCT; CAG→CAA; AAG→AAA; GAG→GAA; CGA and CGG→CGC; GGG→GGC.

Amplification

The standard PCR protocol was as follows: 50-200 ng of genomic DNA were used as a template in the presence of 20-40 µM of each oligo, 400-800 µM dNTPs solution, 1x PCR buffer (including 1.5 mM MgCl₂), 2.5 units *TaqI* DNA polymerase (using Perkin-Elmer AmpliTaq, GIBCO Platinum, Pwo DNA polymerase, or Tahara Shuzo Taq polymerase).

In some cases, PCR was optimised by the addition of 10 µl DMSO or 50 µl 2M betaine.

After a hot start (adding the polymerase during a preliminary 3 minute incubation of the whole mix at 95°C), each sample underwent a double-step amplification: the first 5 cycles were performed using as the hybridization temperature the one of the oligos excluding the restriction enzymes tail, followed by 30 cycles performed according to the hybridization temperature of the whole length oligos. The cycles were followed by a final 10 minute extension step at 72°C.

The standard cycles were as follows:

	Denaturation	Hybridisation	Elongation
First 5 cycles	30 seconds 95°C	30 seconds 50-55°C	30-60 seconds 72°C
Last 30 cycles	30 seconds 95°C	30 seconds 65-70°C	30-60 seconds 72°C

The elongation time varied according to the length of the ORF to be amplified.

The amplifications were performed using either a 9600 or a 2400 Perkin Elmer GeneAmp PCR System. To check the results, 1/10 of the amplification volume was loaded onto a 1-1.5% agarose gel and the size of each amplified fragment compared with a DNA molecular weight marker.

The amplified DNA was either loaded directly on a 1% agarose gel or first precipitated with ethanol and resuspended in a suitable volume to be loaded on a 1% agarose

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gel. The DNA fragment corresponding to the right size band was then eluted and purified from gel, using the Qiagen Gel Extraction Kit, following the instructions of the manufacturer. The final volume of the DNA fragment was 30µl or 50µl of either water or 10mM Tris, pH 8.5.

5 Digestion of PCR fragments

The purified DNA corresponding to the amplified fragment was split into 2 aliquots and double-digested with:

NdeI/XhoI or *NheI/XhoI* for cloning into pET-21b+ and further expression of the protein as a C-terminus His-tag fusion

10 BamHI/XhoI or *EcoRI/XhoI* for cloning into pGEX-KG and further expression of the protein as a GST N-terminus fusion.

For ORF 76, *NheI/BamHI* for cloning into pTRC-HisA vector and further expression of the protein as N-terminus His-tag fusion.

Each purified DNA fragment was incubated (37°C for 3 hours to overnight) with 20
15 units of each restriction enzyme (New England Biolabs) in a either 30 or 40 µl final volume in the presence of the appropriate buffer. The digestion product was then purified using the QIAquick PCR purification kit, following the manufacturer's instructions, and eluted in a final volume of 30 (or 50) µl of either water or 10mM Tris-HCl, pH 8.5. The final DNA concentration was determined by 1% agarose gel electrophoresis in the presence of titrated
20 molecular weight marker.

Digestion of the cloning vectors (pET22B, pGEX-KG and pTRC-His A)

10 µg plasmid was double-digested with 50 units of each restriction enzyme in 200 µl reaction volume in the presence of appropriate buffer by overnight incubation at 37°C. After loading the whole digestion on a 1% agarose gel, the band corresponding to the digested
25 vector was purified from the gel using the Qiagen QIAquick Gel Extraction Kit and the DNA was eluted in 50 µl of 10 mM Tris-HCl, pH 8.5. The DNA concentration was evaluated by measuring OD₂₆₀ of the sample, and adjusted to 50 µg/µl. 1 µl of plasmid was used for each cloning procedure.

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Cloning

The fragments corresponding to each ORF, previously digested and purified, were ligated in both pET22b and pGEX-KG. In a final volume of 20 μ l, a molar ratio of 3:1 fragment/vector was ligated using 0.5 μ l of NEB T4 DNA ligase (400 units/ μ l), in the presence of the buffer supplied by the manufacturer. The reaction was incubated at room temperature for 3 hours. In some experiments, ligation was performed using the Boehringer "Rapid Ligation Kit", following the manufacturer's instructions.

In order to introduce the recombinant plasmid in a suitable strain, 100 μ l *E. coli* DH5 competent cells were incubated with the ligation reaction solution for 40 minutes on ice, then at 37°C for 3 minutes, then, after adding 800 μ l LB broth, again at 37°C for 20 minutes. The cells were then centrifuged at maximum speed in an Eppendorf microfuge and resuspended in approximately 200 μ l of the supernatant. The suspension was then plated on LB ampicillin (100 mg/ml).

The screening of the recombinant clones was performed by growing 5 randomly-chosen colonies overnight at 37 °C in either 2 ml (pGEX or pTC clones) or 5ml (pET clones) LB broth + 100 μ g/ml ampicillin. The cells were then pelleted and the DNA extracted using the Qiagen QIAprep Spin Miniprep Kit, following the manufacturer's instructions, to a final volume of 30 μ l. 5 μ l of each individual miniprep (approximately 1g) were digested with either *NdeI/XhoI* or *BamHI/XhoI* and the whole digestion loaded onto a 1-1.5% agarose gel (depending on the expected insert size), in parallel with the molecular weight marker (1Kb DNA Ladder, GIBCO). The screening of the positive clones was made on the base of the correct insert size.

Cloning

Certain ORFs may be cloned into the pGEX-HIS vector using *EcoRI-PstI*, *EcoRI-SalI*, or *SalI-PstI* cloning sites. After cloning, the recombinant plasmids may be introduced in the *E.coli* host W3110.

Expression

Each ORF cloned into the expression vector may then be transformed into the strain suitable for expression of the recombinant protein product. 1 μ l of each construct was used to

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transform 30 µl of *E. coli* BL21 (pGEX vector), *E. coli* TOP 10 (pTRC vector) or *E. coli* BL21-DE3 (pET vector), as described above. In the case of the pGEX-His vector, the same *E. coli* strain (W3110) was used for initial cloning and expression. Single recombinant colonies were inoculated into 2ml LB+Amp (100 µg/ml), incubated at 37°C overnight, then diluted
5 1:30 in 20 ml of LB+Amp (100 µg/ml) in 100 ml flasks, making sure that the OD₆₀₀ ranged between 0.1 and 0.15. The flasks were incubated at 30°C into gyratory water bath shakers until OD indicated exponential growth suitable for induction of expression (0.4-0.8 OD for pET and pTRC vectors; 0.8-1 OD for pGEX and pGEX-His vectors). For the pET, pTRC and pGEX-His vectors, the protein expression was induced by addition of 1mM IPTG,
10 whereas in the case of pGEX system the final concentration of IPTG was 0.2 mM. After 3 hours incubation at 30°C, the final concentration of the sample was checked by OD. In order to check expression, 1ml of each sample was removed, centrifuged in a microfuge, the pellet resuspended in PBS, and analysed by 12% SDS-PAGE with Coomassie Blue staining. The whole sample was centrifuged at 6000g and the pellet resuspended in PBS for further use.

15 GST-fusion proteins large-scale purification.

A single colony was grown overnight at 37°C on LB+Amp agar plate. The bacteria were inoculated into 20 ml of LB+Amp liquid culture in a water bath shaker and grown overnight. Bacteria were diluted 1:30 into 600 ml of fresh medium and allowed to grow at the optimal temperature (20-37°C) to OD₅₅₀ 0.8-1. Protein expression was induced with
20 0.2mM IPTG followed by three hours incubation. The culture was centrifuged at 8000 rpm at 4°C. The supernatant was discarded and the bacterial pellet was resuspended in 7.5 ml cold PBS. The cells were disrupted by sonication on ice for 30 sec at 40W using a Branson sonifier B-15, frozen and thawed two times and centrifuged again. The supernatant was collected and mixed with 150µl Glutathione-Sepharose 4B resin (Pharmacia) (previously
25 washed with PBS) and incubated at room temperature for 30 minutes. The sample was centrifuged at 700g for 5 minutes at 4°C. The resin was washed twice with 10 ml cold PBS for 10 minutes, resuspended in 1ml cold PBS, and loaded on a disposable column. The resin was washed twice with 2ml cold PBS until the flow-through reached OD₂₈₀ of 0.02-0.06. The GST-fusion protein was eluted by addition of 700µl cold Glutathione elution buffer
30 10mM reduced glutathione, 50mM Tris-HCl) and fractions collected until the OD₂₈₀ was 0.1.

21µl of each fraction were loaded on a 12% SDS gel using either Biorad SDS-PAGE Molecular weight standard broad range (M1) (200, 116.25, 97.4, 66.2, 45, 31, 21.5, 14.4, 6.5 kDa) or Amersham Rainbow Marker (M'') (220, 66, 46, 30, 21.5, 14.3 kDa) as standards. As the MW of GST is 26kDa, this value must be added to the MW of each GST-fusion protein.

5 His-fusion soluble proteins large-scale purification.

A single colony was grown overnight at 37°C on a LB + Amp agar plate. The bacteria were inoculated into 20ml of LB+Amp liquid culture and incubated overnight in a water bath shaker. Bacteria were diluted 1:30 into 600ml fresh medium and allowed to grow at the optimal temperature (20-37°C) to OD₅₅₀ 0.6-0.8. Protein expression was induced by
10 addition of 1 mM IPTG and the culture further incubated for three hours. The culture was centrifuged at 8000 rpm at 4°C, the supernatant was discarded and the bacterial pellet was resuspended in 7.5ml cold 10mM imidazole buffer (300 mM NaCl, 50 mM phosphate buffer, 10 mM imidazole, pH 8). The cells were disrupted by sonication on ice for 30 sec at 40W using a Branson sonifier B-15, frozen and thawed two times and centrifuged again. The
15 supernatant was collected and mixed with 150µl Ni²⁺-resin (Pharmacia) (previously washed with 10mM imidazole buffer) and incubated at room temperature with gentle agitation for 30 minutes. The sample was centrifuged at 700g for 5 minutes at 4°C. The resin was washed twice with 10 ml cold 10mM imidazole buffer for 10 minutes, resuspended in 1ml cold 10mM imidazole buffer and loaded on a disposable column. The resin was washed at 4°C
20 with 2ml cold 10mM imidazole buffer until the flow-through reached the O.D₂₈₀ of 0.02-0.06. The resin was washed with 2ml cold 20mM imidazole buffer (300 mM NaCl, 50 mM phosphate buffer, 20 mM imidazole, pH 8) until the flow-through reached the O.D₂₈₀ of 0.02-0.06. The His-fusion protein was eluted by addition of 700µl cold 250mM imidazole buffer (300 mM NaCl, 50 mM phosphate buffer, 250 mM imidazole, pH 8) and fractions collected
25 until the O.D₂₈₀ was 0.1. 21µl of each fraction were loaded on a 12% SDS gel.

His-fusion insoluble proteins large-scale purification.

A single colony was grown overnight at 37 °C on a LB + Amp agar plate. The bacteria were inoculated into 20 ml of LB+Amp liquid culture in a water bath shaker and grown overnight. Bacteria were diluted 1:30 into 600ml fresh medium and let to grow at the

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optimal temperature (37°C) to O.D₅₅₀ 0.6-0.8. Protein expression was induced by addition of 1 mM IPTG and the culture further incubated for three hours. The culture was centrifuged at 8000rpm at 4°C. The supernatant was discarded and the bacterial pellet was resuspended in 7.5 ml buffer B (urea 8M, 10mM Tris-HCl, 100mM phosphate buffer, pH 8.8). The cells
5 were disrupted by sonication on ice for 30 sec at 40W using a Branson sonifier B-15, frozen and thawed twice and centrifuged again. The supernatant was stored at -20°C, while the pellets were resuspended in 2 ml guanidine buffer (6M guanidine hydrochloride, 100mM phosphate buffer, 10 mM Tris-HCl, pH 7.5) and treated in a homogenizer for 10 cycles. The product was centrifuged at 13000 rpm for 40 minutes. The supernatant was mixed with
10 150µl Ni²⁺-resin (Pharmacia) (previously washed with buffer B) and incubated at room temperature with gentle agitation for 30 minutes. The sample was centrifuged at 700 g for 5 minutes at 4°C. The resin was washed twice with 10 ml buffer B for 10 minutes, resuspended in 1ml buffer B, and loaded on a disposable column. The resin was washed at room temperature with 2ml buffer B until the flow-through reached the OD₂₈₀ of 0.02-0.06.
15 The resin was washed with 2ml buffer C (urea 8M, 10mM Tris-HCl, 100mM phosphate buffer, pH 6.3) until the flow-through reached the O.D₂₈₀ of 0.02-0.06. The His-fusion protein was eluted by addition of 700µl elution buffer (urea 8M, 10mM Tris-HCl, 100mM phosphate buffer, pH 4.5) and fractions collected until the OD₂₈₀ was 0.1. 21µl of each fraction were loaded on a 12% SDS gel.

20 His-fusion proteins renaturation

10% glycerol was added to the denatured proteins. The proteins were then diluted to 20µg/ml using dialysis buffer I (10% glycerol, 0.5M arginine, 50mM phosphate buffer, 5mM reduced glutathione, 0.5mM oxidised glutathione, 2M urea, pH 8.8) and dialysed against the same buffer at 4°C for 12-14 hours. The protein was further dialysed against dialysis buffer
25 II (10% glycerol, 0.5M arginine, 50mM phosphate buffer, 5mM reduced glutathione, 0.5mM oxidised glutathione, pH 8.8) for 12-14 hours at 4°C. Protein concentration was evaluated using the formula:

$$\text{Protein (mg/ml)} = (1.55 \times \text{OD}_{280}) - (0.76 \times \text{OD}_{260})$$

Mice immunisations

20µg of each purified protein were used to immunise mice intraperitoneally. In the case of some ORFs, Balb-C mice were immunised with Al(OH)₃ as adjuvant on days 1, 21 and 42, and immune response was monitored in samples taken on day 56. For other ORFs, CD1 mice could be immunised using the same protocol. For other ORFs, CD1 mice could be immunised using Freund's adjuvant, and the same immunisation protocol was used, except that the immune response was measured on day 42, rather than 56. Similarly, for still other ORFs, CD1 mice could be immunised with Freund's adjuvant, but the immune response was measured on day 49.

ELISA assay (sera analysis)

The acapsulated MenB M7 strain was plated on chocolate agar plates and incubated overnight at 37°C. Bacterial colonies were collected from the agar plates using a sterile dracon swab and inoculated into 7ml of Mueller-Hinton Broth (Difco) containing 0.25% Glucose. Bacterial growth was monitored every 30 minutes by following OD₆₂₀. The bacteria were let to grow until the OD reached the value of 0.3-0.4. The culture was centrifuged for 10 minutes at 10000 rpm. The supernatant was discarded and bacteria were washed once with PBS, resuspended in PBS containing 0.025% formaldehyde, and incubated for 2 hours at room temperature and then overnight at 4°C with stirring. 100µl bacterial cells were added to each well of a 96 well Greiner plate and incubated overnight at 4°C. The wells were then washed three times with PBT washing buffer (0.1% Tween-20 in PBS). 200 µl of saturation buffer (2.7% Polyvinylpyrrolidone 10 in water) was added to each well and the plates incubated for 2 hours at 37°C. Wells were washed three times with PBT. 200 µl of diluted sera (Dilution buffer: 1% BSA, 0.1% Tween-20, 0.1% NaN₃ in PBS) were added to each well and the plates incubated for 90 minutes at 37°C. Wells were washed three times with PBT. 100 µl of HRP-conjugated rabbit anti-mouse (Dako) serum diluted 1:2000 in dilution buffer were added to each well and the plates were incubated for 90 minutes at 37°C. Wells were washed three times with PBT buffer. 100 µl of substrate buffer for HRP (25 ml of citrate buffer pH5, 10 mg of O-phenildiamine and 10 µl of H₂O) were added to each well and the plates were left at room temperature for 20 minutes. 100 µl H₂SO₄ was added to each

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well and OD₄₉₀ was followed. The ELISA was considered positive when OD₄₉₀ was 2.5 times the respective pre-immune sera.

FACScan bacteria Binding Assay procedure.

The acapsulated MenB M7 strain was plated on chocolate agar plates and incubated overnight at 37°C. Bacterial colonies were collected from the agar plates using a sterile
5 dracon swab and inoculated into 4 tubes containing 8ml each Mueller-Hinton Broth (Difco) containing 0.25% glucose. Bacterial growth was monitored every 30 minutes by following OD₆₂₀. The bacteria were let to grow until the OD reached the value of 0.35-0.5. The culture was centrifuged for 10 minutes at 4000 rpm. The supernatant was discarded and the pellet
10 was resuspended in blocking buffer (1% BSA, 0.4% NaN₃) and centrifuged for 5 minutes at 4000 rpm. Cells were resuspended in blocking buffer to reach OD₆₂₀ of 0.07. 100µl bacterial cells were added to each well of a Costar 96 well plate. 100µl of diluted (1:200) sera (in blocking buffer) were added to each well and plates incubated for 2 hours at 4°C. Cells were centrifuged for 5 minutes at 4000 rpm, the supernatant aspirated and cells washed by addition
15 of 200µl/well of blocking buffer in each well. 100µl of R-Phicoerytrin conjugated F(ab)₂ goat anti-mouse, diluted 1:100, was added to each well and plates incubated for 1 hour at 4°C. Cells were spun down by centrifugation at 4000rpm for 5 minutes and washed by addition of 200µl/well of blocking buffer. The supernatant was aspirated and cells resuspended in 200µl/well of PBS, 0.25% formaldehyde. Samples were transferred to
20 FACScan tubes and read. The condition for FACScan setting were: FL1 on, FL2 and FL3 off; FSC-H Treshold:92; FSC PMT Voltage: E 02; SSC PMT: 474; Amp. Gains 7.1; FL-2 PMT: 539. Compensation values: 0.

OMV preparations

Bacteria were grown overnight on 5 GC plates, harvested with a loop and resuspended
25 in 10 ml 20mM Tris-HCl. Heat inactivation was performed at 56°C for 30 minutes and the bacteria disrupted by sonication for 10' on ice (50% duty cycle, 50% output). Unbroken cells were removed by centrifugation at 5000g for 10 minutes and the total cell envelope fraction recovered by centrifugation at 50000g at 4°C for 75 minutes. To extract cytoplasmic membrane proteins from the crude outer membranes, the whole fraction was resuspended in

- 67 -

2% sarkosyl (Sigma) and incubated at room temperature for 20 minutes. The suspension was centrifuged at 10000g for 10 minutes to remove aggregates, and the supernatant further ultracentrifuged at 50000g for 75 minutes to pellet the outer membranes. The outer membranes were resuspended in 10mM Tris-HCl, pH8 and the protein concentration
5 measured by the Bio-Rad Protein assay, using BSA as a standard.

Whole Extracts preparation

Bacteria were grown overnight on a GC plate, harvested with a loop and resuspended in 1ml of 20mM Tris-HCl. Heat inactivation was performed at 56°C for 30' minutes.

Western blotting

10 Purified proteins (500ng/lane), outer membrane vesicles (5 µg) and total cell extracts (25µg) derived from MenB strain 2996 were loaded on 15% SDS-PAGE and transferred to a nitrocellulose membrane. The transfer was performed for 2 hours at 150mA at 4°C, in transferring buffer (0.3 % Tris base, 1.44 % glycine, 20% methanol). The membrane was saturated by overnight incubation at 4°C in saturation buffer (10% skimmed milk, 0.1%
15 Triton X100 in PBS). The membrane was washed twice with washing buffer (3% skimmed milk, 0.1% Triton X100 in PBS) and incubated for 2 hours at 37°C with 1:200 mice sera diluted in washing buffer. The membrane was washed twice and incubated for 90 minutes with a 1:2000 dilution of horseradish peroxidase labeled anti-mouse Ig. The membrane was washed twice with 0.1% Triton X100 in PBS and developed with the Opti-4CN Substrate Kit
20 (Bio-Rad). The reaction was stopped by adding water.

Bactericidal assay

MC58 strain was grown overnight at 37°C on chocolate agar plates. 5-7 colonies were collected and used to inoculate 7ml Mueller-Hinton broth. The suspension was incubated at 37°C on a nutator and let to grow until OD₆₂₀ was in between 0.5-0.8. The
25 culture was aliquoted into sterile 1.5ml Eppendorf tubes and centrifuged for 20 minutes at maximum speed in a microfuge. The pellet was washed once in Gey's buffer (Gibco) and resuspended in the same buffer to an OD₆₂₀ of 0.5, diluted 1:20000 in Gey's buffer and stored at 25°C.

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50µl of Gey's buffer/1% BSA was added to each well of a 96-well tissue culture plate. 25µl of diluted (1:100) mice sera (dilution buffer: Gey's buffer/0.2% BSA) were added to each well and the plate incubated at 4°C. 25µl of the previously described bacterial suspension were added to each well. 25µl of either heat-inactivated (56°C waterbath for 30 minutes) or normal baby rabbit complement were added to each well. Immediately after the addition of the baby rabbit complement, 22µl of each sample/well were plated on Mueller-Hinton agar plates (time 0). The 96-well plate was incubated for 1 hour at 37°C with rotation and then 22µl of each sample/well were plated on Mueller-Hinton agar plates (time 1). After overnight incubation the colonies corresponding to time 0 and time 1h were counted.

The following DNA and amino acid sequences are identified by titles of the following form: [g, m, or a] [#].[seq or pep], where "g" means a sequence from *N. gonorrhoeae*, "m" means a sequence from *N. meningitidis B*, and "a" means a sequence from *N. meningitidis A*; "#" means the number of the sequence; "seq" means a DNA sequence, and "pep" means an amino acid sequence. For example, "g001.seq" refers to an *N. gonorrhoeae* DNA sequence, number 1. The presence of the suffix "-1" or "-2" to these sequences indicates an additional sequence found for the same ORF. Further, open reading frames are identified as ORF #, where "#" means the number of the ORF, corresponding to the number of the sequence which encodes the ORF, and the ORF designations may be suffixed with ".ng" or ".a", indicating that the ORF corresponds to a *N. gonorrhoeae* sequence or a *N. meningitidis A* sequence, respectively. Computer analysis was performed for the comparisons that follow between "g", "m", and "a" peptide sequences; and therein the "pep" suffix is implied where not expressly stated.

EXAMPLE 1

The following ORFs were predicted from the contig sequences and/or the full length sequence using the methods herein described.

Localization of the ORFs

30	ORF:	contig:
	279	gnm4.seq

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 962>:

- 69 -

m279.seq

```

1   ATAACGCGGA TTTGCGGCTG CTTGATTTC ACGGTTTCA GGGCTTCGGC
51  AAGTTTGTCT GCGGCGGGTT TCATCAGGCT GCAATGGGAA GGTACGGACA
101 CGGGCAGCGG CAGGGCGCGT TTGGCACC GGCTTTTGGC GGCAGCCATG
5   151  GCGCGTCCGA CGGCGGCGGC GTTGCTGCA ATCAGATTT GTCCGGGTGA
201  GTTGAAGTTG ACGGCTTCGA CCACTTCGCT TTGGGCGGCT TCGGCACAAA
251  TGGCTTTAAC CTGCTCATCT TCCAAGCCGA GAATCGCCGC CATTGCGCCC
301  ACGCCTTGCG GTACGGCGGA CTGCATCAGT TCGGCGGCA GCGCACGAG
351  TTTGACCGCG TCGGCAAAAT TCAATGCGCC GCGGCAACG AGTGCGGTGT
10  401  ATTCGCGGAG GCTGTGTCCG GCAACGGCGG CAGGCGTTT GCCGCCGCT
451  TCTAAATAG

```

This corresponds to the amino acid sequence <SEQ ID 963; ORF 279>:

m279.pep

```

15  1   ITRICGCLIS TVFRASASLS AAGFIRLOWE GTDTGSGRAR LAPASLAAAM
51  VRPTAAALPA ITTCPGELKL TASTTSLWAA SAQMALTCSS SKPRIAAIAP
101 TPCGTADCIS SARRRTSLTA SAKFNAPAAT SAVYSPRLCP ATAAGVLPFA
151  SK*

```

20 The following partial DNA sequence was identified in *N.gonorrhoeae* <SEQ ID 964>:

g279.seq

```

1   atgacgcgga ttgcgcgctg cttgatttca acggttttga gtgtttcggc
51  aagttttctc gcgcgcggtt tcatcaggct gcaatgggaa ggaacggata
101 cgggcagcgg cagggcgcggt ttgcttcggg cttctttggc ggcagccatg
25  151  gtgcttcgga cggcgcgcggt cttgcttcgca atcacgactt gtccggcgga
201  gttgaagttg acggcttcga ccaactcgcc ctgtgcggat tcggcacaaa
251  tctgcctgac ctgttcattt tccaaaccca aaatggccgc cattgcgcct
301  acgccttcgg gtacggcgga ctgcattcag tccggcgcca ggcggacgag
351  tttgacggca tcggcaaaat ccaatgcttc ggcggcgaca agcgcggtgt
30  401  attcgccgag gctgtgtcgg gcaacggcgg cagggcgttt gccgcccaat
451  tccaaatag

```

This corresponds to the amino acid sequence <SEQ ID 965; ORF 279.ng>:

g279.pep

```

35  1   MTRICGCLIS TVLSVSASLS AAGFIRLOWE GTDTGSGRAR LAPASLAAAM
51  VRPTAAALPA ITTCPGELKL TASTTSPCAD SAQICLTCS SKPKMAAIAP
101 TPCGTADCIS SARRRTSLTA SAKNSASAAT SAVYSPRLCP ATAAGVLPPT
151  SK*

```

40 ORF 279 shows 89.5% identity over a 152 aa overlap with a predicted ORF (ORF 279.ng) from *N. gonorrhoeae*:

```

10      20      30      40      50      60
m279.pep  ITRICGCLISTVFRASASLSAAGFIRLOWEGTDTGSGRARLAPASLAAAMARPTAAALPA
          :|||||: :|||||: :|||||: :|||||: :|||||: :|||||:
45  g279    MTRICGCLISTVLSVSASLSAAGFIRLOWEGTDTGSGRARLAPASLAAAMVRPTAAALPA
          10      20      30      40      50      60

70      80      90      100     110     120
m279.pep  ITTCPGELKL TASTTSLWAA SAQMALTCSS SKPRIAAIAPT PCGTADCISSARRRTSLTA
          || |||||: ||||: |||||: :|||||: :|||||: :|||||:
50  g279    ITTCPGELKL TASTTSPCAD SAQICLTCS SKPKMAAIAPT PCGTADCISSARRRTSLTA
          70      80      90      100     110     120

130      140     150
m279.pep  SAKFNAPAATSAVYSPRLCPATAAGVLPAPSKX
          || || |||||: |||||: |||||: |||||: |||||:
55  g279    SAKNSASAATSAVYSPRLCPATAAGVLPPTSKX
          130      140     150

```

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 966>:

```

a279.seq
1  ATGACNNGA  TTGCGGCTG  CTGATTTC  ACGGTTTNA  GGGCTTCGGC
5  51  GAGTTTGTG  GCGGCGGCTT  TCATGAGGCT  GCAATGGGAA  GGTACNGACA
101  CNGGCAGCGG  CAGGGCGCGT  TTGCGCGCGG  CTTCTTTGGC  GGCAAGCATA
151  GCGCGCTCGA  CCGCGGCGGC  ATTGCCTGCA  ATCAGCACTT  GTCCGGGCGA
201  GTTGAAGTTG  ACGGCTTCAA  CCACTTCATC  CTGTGCGGAT  TCGGCGCAAA
251  TTGTTTTTAC  CTGTTTCTCT  TCCAAGCCGA  GAATCGCCGC  CATTGCGCCC
10  301  ACGCCTTGGC  GTACGGCGGA  CTGCATCACT  TCGGCGCGCA  NGCGCACGAG
351  TTGACCGCG  TCGGCAAAAT  CCAATGCGCC  GCGGCAACN  AGTGGGTGT
401  ATTGCGCGAN  GCTGTGTCCG  GCAACGGCGG  CAGGCGTTTT  GCCGCCGCT
451  TCCGAATAG

```

15 This corresponds to the amino acid sequence <SEQ ID 967; ORF 279.a>:

```

a279.pep
1  MTXICGCLIS  TVXHASASLS  AAGFMRLWE  GTDTGSGRAR  LAPASLAASI
51  AESTAAALFA  ITCPGELKL  TASTTSSCAD  SAQICFTCSS  SKPRIAALAP
101  TPCGTADCL  SAKXRTSLTA  SAKSNAPAA  SAVYSPXLCP  ATAAGVLFFA
20  151  SE*

```

m279/a279 ORFs 279 and 279.a showed a 88.2% identity in 152 aa overlap

		10	20	30	40	50	60
25	m279.pep	ITRICGCLISTVFRASASISAGFIKLOWEGTDTGSGRARLAPASLAAMARPTAAALFA					
	a279	MTXICGCLISTVXRASASLSAAGFMRLWEGTDTGSGRARLAPASLAASIAESTAAALFA					
		10	20	30	40	50	60
30	m279.pep	ITTCPGELKLTAATTSIWAASAQMALTCSSSKPRIAALAPTTCGTADCLSSARXRTSLTA					
	a279	ITTCPGELKLTAATTSIWAASAQMALTCSSSKPRIAALAPTTCGTADCLSSARXRTSLTA					
		70	80	90	100	110	120
35	m279.pep	SAKFNAPAAATSAVYSPRLCPATAAGVLFFPASKX					
	a279	SAKSNAPAAATSAVYSPXLCPATAAGVLFFPASEX					
40		130	140	150			

519 and 519-1 gnm7.seq

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 968>:

```

45  m519.seq (partial)
1  ..TCCGTTATCG  GCGGTATGGA  GTTGGACAAA  ACGTTTGAAG  AACGCGACGA
51  AATCAACAGT  ACTGTTGTTG  CGGCTTTGGA  CGAGGCGGCC  GGGgCTTgGG
101  GTGTGAAGGT  TTTGCGTTAT  GAGATTAAAG  ACTTGGTTC  GCCGCAAGAA
50  151  ATCCTTCGCT  CAATGCAGGC  GCAAACTACT  GCCGAACGCG  AAAAACGCGC
201  CCGTATCGCC  GAATCCGAAG  GTCGTAAAAT  CGAACAAATC  AACCTTGCCA
251  GTGGTCAGCG  CGAAGCCGAA  ATCCAACAAT  CCGAAGGCGA  GGCTCAGGCT
301  GCGGTCAATG  CGTCAAATGC  CGAGAAAATC  GCCCGCATCA  ACCGCGCCAA
351  AGGTGAAGCG  GAATCCTTGC  GCCTTGTTC  CGAAGCCAAT  GCCGAAGCCA
401  TCCGTCAAAT  TGCCGCGGCC  CTTCAAACCC  AAGGCGGTGC  GGATGCGGTC
55  451  AATCTGAAGA  TTGCGGAACA  ATACGTCGCT  GCGTTCAACA  ATCTTGCCAA
501  AGAAGCAAT  ACGCTGATTA  TGCCCGCCAA  TGTTCGCGAC  ATCGGCAGCC
551  TGATTTCTGC  CGGTATGAAA  ATTATCGACA  GCAGCAAAAC  CGCCAAaTAA

```

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This corresponds to the amino acid sequence <SEQ ID 969; ORF 519>:

```

m519.pep      (partial)
1      ..SVIGRMELDK TFEERDEINS TVVAALDEAA GAWGVKVLRY EIKDLVPPQE
51      ILKSMQAOIT AEREKRARIA ESEGRKIEQI NLAGQREAE IQOSEGEAQA
101     AVNASNAEKI ARINRAKGEA ESLRLVAEAN AEAIQIAAA LQTQGGADAV
151     NLKIAEQYVA AFNNLAKESN TLIMPANVAD IGSLSAGMK IIDSSKTAK*

```

The following partial DNA sequence was identified in *N. gonorrhoeae* <SEQ ID 970>:

```

g519.seq
10      1      atggaatttt tcattatcct gttggcagcc gtcgccgttt tcggcttcaa
      51      atcctttgtc gcatccccc agcaggaagt ccacgttgtc gaaaggctcg
      101     ggcgtttcca tcggccctg acggccggtt tgaatatatt gattcccttt
      151     atcgaccgag tcgactaccg ccattcgtcg aaagaatcc ctttagacgt
      201     acccagccag gtcctcatca cggcgataa tacgcaattg actgttgacg
15      251     gcatcatcta ttccaagta accgatccca aactcgcttc ataccggttcg
      301     agcaactaca ttatggcaat taaccagctt gcccaaacga cgtcgcttc
      351     cgttatcggg cgtatggagt tggacaaaac gtttgaagaa cgcgacgaaa
      401     tcaacagtac cgtcgtctcc gccctcgatg aagcccgccg gcttgggggt
      451     gggaagctcc tcggttagca aatcaaggat ttggttccgc cgcaagaat
20      501     ccttcgcgca atgcaggcac aattaccgc cgaacgcgaa aaacgcgccc
      551     gtattgccga atccgagggc cgtaaaatcg aacaaatcaa ccttgccagt
      601     gctcagcgtg aagccgaaat ccaacaatcc gaaggcgagg ctcaggctgc
      651     ggtcaatcgg tccaatcccg agaaaatcgc ccgatcaac cgcgccaaag
      701     gccgaagcga atccctgcgc ctgtttgcgc aagccaatgc cgaagccaac
25      751     cgtcaaatfg ccgcccgcct tcaaacccaa agcggggcgg atgcggtcaa
      801     tctgaagatt cggggacaat acgttacgcg gtcaaaaat cttgccaaag
      851     aagacaatac cgggattaag cccgccagg ttgccgaat cgggaacctt
      901     aattttcggc ggcattgaaa attttcgcca gaagcaaaaa cggccaaata
      951     a

```

30 This corresponds to the amino acid sequence <SEQ ID 971; ORF 519.ng>:

```

g519.pep
1      MEFFIILLAA VAVPGFKSFV VIPQEVHV V ERLGRFHRAL TAGLNILIPF
51      IDRVAYRHSL KEIPLDVPSQ VCITRDNTQL TVDGIIFYQV TDPKLASYGS
101     SNYIMAITQL AQTTLRSVIG RMELDKTFEE RDEINSTVVS ALDEAAGAWG
35      151     VKVLRVEIKD LVFPQEI LRA MQAOITAE RE KRARIAESE G RKIEQINLAS
      201     GQREAEIQOS EGEAQA AVNA SNAEKIAR IN RAKGEAESLR LVAEANAEAN
      251     RQIAAALQTO SGADAVNLKI AGQYVTAFKN LAKEDNTRIK PAKVAEIGNP
      301     NFRRHEKFSP EAKTAK*

```

40 ORF 519 shows 87.5% identity over a 200 aa overlap with a predicted ORF (ORF 519.ng) from *N. gonorrhoeae*:

```

m519/g519
45      m519.pep      10      20      30
      SVIGRMELDKTFEERDEINSTVVAALDEAA
      g519      YFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIGRMELDKTFEERDEINSTVVSALDEAA
      90      100      110      120      130      140

50      40      50      60      70      80      90
      m519.pep      GAWGVKVLRYEIKDLVPPQEILKSMQAOITAEERKRARIAESEGRKIEQINLAGQREAE
      g519      GAWGVKVLRYEIKDLVPPQEILRAMQAOITAEERKRARIAESEGRKIEQINLAGQREAE
      150      160      170      180      190      200

55      100      110      120      130      140      150
      m519.pep      IQOSEGEAQA AVNASNAEKIARINRAKGEAESLRLVAEANAEAIQIAAALQQTGGADAV

```


[illegible]

```

a519.seq
1  ATGGGAATTTT  TCAATTATCTT  GCTGGCAGCC  GTCGTTGTTT  TCGGCTTCAA
51  ATCCTTTGTT  GTCAATCCCAC  AGCAGGAAGT  CCACGTTGTC  GAAAGGCTCG
101  GCGCTTTCCA  TCGCGCCCTG  AGCGCCGGTT  TGAATATTTT  GATTTCCCTT
151  ATCGACAGCC  TCGCCCTACCG  CCAATTGCTG  AAGAAATATCC  CTTTAGACGT
201  ACCCAGCCAG  GTCTGCATCA  CGCGCGACAA  TACGCAGCTG  ACTGTTGACG
251  GTATCATCTA  TTTCCAAAGTA  ACCGACCCCA  AACTCGCCTC  ATACGGTTTCG
301  AGCAACTACA  TTATGGCGAT  TACCCAGCTT  GCCCAAAACA  CGCTGCGTTT
351  CGTTATCGGG  CGTATGGAAT  TGGCAAAAC  GTTTGAAGAA  CGCGACGAAA
401  TCAACAGCAC  CCGTCTCTCC  GCCCTCGATG  AAGCGCCCGG  AGCTTGCGGT
451  GTGAAGGTTT  TCGCTTATGA  GATTAAAGAC  TTGTTTCCGC  CGCAGAGAAAT
501  CCTTCGCTCA  ATGCAGGCGC  AAATTACTGC  TGAACGCGAA  AAGCGCGCCC
551  GTATCGCCGA  ATCCGAAGGT  CTAATAATCG  AACAAATCAA  CCTTCCGACT
601  GGTCAAGCGC  TAGCCGAAT  CCAACAATCC  GAAGCGAGAG  CTCAGGCTGC
651  GCTCAATCGC  TACGTCGCG  AGAAATATCC  CCGCATACAC  CGCGCCAAAG
701  GTGAAGCGGA  ATCCTTGCGC  CTTGTTGCGC  AAGCCAATGC  CGAAGCCATC
751  CGTCAAAATT  CGCGCGCCCT  TCAAAACCAA  GGCGGTGCGG  ATCGGCTCAA
801  TCTGAAGATT  CGCGAACAAT  ACGTCGCGCG  ETTCAACAAT  CTTGCCAAGT
851  AAGCGAATAC  CCGGATTTATG  CCGCGCAAT  TTGCCGACAT  CGGCAAGCG
901  ATTTCGCGCG  GTATGAAAT  TATCGACAGC  AGCAAAACCG  CCAATAAA

```

```
a519.pep
1  MEFFIIILLAA VVVFGRKSFV VIFQEEVHV ERIGRFHRL TAGLNILIPF
51  JDFVAYRHSL KLIILDFVPSQ VCITRDNTQL TVDGIIFYQV TDPKLASAGS
161 SNYIMAITQL AQTILKSVIG RMELDKTFEE RDEINSTVVS ALIEAAGAWG
151 VKVLRYEIKD LVPPQEILRS MQAQITAERE KRARIAESG RKIEQINLAS
261 GQRELIQQS EGEAGAAVNA SNAEKIARIN RAKGEAESLR LVAAEAEAI
251 RCIAAALQTO GGAADVNLKI AEQYVAAFNN LAKESNTLIM FANVADIGSL
301 ISAGMKLIDS SKTAK*
```

m519.pep						10	20	30
						SVIGRMELDKTTFEERDEINSTVVAALDEAA		
a519	YFQVTDPKLASYGSSNYIMAITQLACTTLRSVIGRMELDKTTFEERDEINSTVVSAALDEAA							
	90	100	110	120	130	140		
m519.pep		40	50	60	70	80	90	
	GAWGVKVLRYEIKDLVPPEIILSRMQAQITAEKEKKARIAESEGRKIEQINLASGQREAE							
a519	GAWGVKVLRYEIKDLVPPEIILSRMQAQITAEKEKKARIAESEGRKIEQINLASGQREAE							
	150	160	170	180	190	200		
m519.pep		100	110	120	130	140	150	
	IQQSEGEAQAAVNASNAEKIARINKAKGEAESLFLVAEANAEAIRQIAAALQTGGADAV							
a519	IQQSEGEAQAAVNASNAEKIARINKAKGEAESLFLVAEANAEAIRQIAAALQTGGADAV							
	210	220	230	240	250	260		

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```

      160      170      180      190      200
m519.pep NLKIAEQYVAAFNNLAKESNTLIMPANVADIGSLISAGMKIIDSSKTAKX
      |||||
5  a519    NLKIAEQYVAAFNNLAKESNTLIMPANVADIGSLISAGMKIIDSSKTAKX
      270      280      290      300      310

```

10 Further work revealed the following DNA sequence identified in *N. meningitidis* <SEQ ID 974>:

```

m519-1.seq
1  ATGGAATTTT TCATTATCTT GTTGCTAGCC GTCGCCGTTT TCGGTTTCAA
51  ATCCTTTGTT GTCATCCAC AACAGGAAGT CCACGTTGTC GAAAGGCTCG
15 101 GCGGTTTCCA TCGCGCCCTG ACGGCGGTT TGAATATTTT GATTCCCTTT
151 ATCGACCGCG TCGCCTACCG CCATTGCTG AAAGAAATCC CTTTAGACGT
201 ACCAGCCAG GTCTGCATCA CGCGCGACAA TACGAGCTG ACTGTTGACG
251 GCATCATCTA TTTCCAAGTA ACCGACCCCA AACTCGCCTC ATACGGTTTCG
301 AGCAACTACA TTATGGCGAT TACCCAGCTT GCCCAAACGA CGCTGCGTTC
20 351 CGTTATCGGG CGTATGGAGT TGGACAAAAC GTTGAAGAA CGCGACGAAA
401 TCAACAGTAC TGTGTTGCG GCTTTGGACG AGGCGGCCGG GGCTTGGGGT
451 GTGAAGGTTT TCGGTTATGA GATTAAAGAC TTGGTTCCGC CGCAAGAAAT
501 CCTTCGCTCA ATGCAGGCGC AATTACTGCG CGAACGCGAA AAACGCGCCC
551 GTATCGCCGA ATCCGAAGT CGTAAATCG AACAAATCAA CTTGCCAGT
25 601 GGTCAATGCG TCAATGCCG AGAAAATCG CCGCATCAAC CGCGCCAAAG
651 GGTCAATGCG TCAATGCCG AGAAAATCG CCGCATCAAC CGCGCCAAAG
701 GTGAAGCGGA ATCCTTGCGC CTGTTGCGG AAGCCAATGC CGAAGCCATC
751 CGTCAAATG CCGCGCCCT TCAAACCAA GCGGTGCGG ATGCGGTCAA
801 TCTGAAGATT GCGGAACAAT ACGTGGCTGC GTTCAACAAT CTTGCCAAAG
30 851 AAGCAATAC GCTGATTATG CCGGCCAATG TTGCCGACAT CGGCAGCCTG
901 ATTTCTGCCG GTATGAAAT TATCGACAGC AGCAAACCG CCAAATAA

```

This corresponds to the amino acid sequence <SEQ ID 975; ORF 519-1>:

```

m519-1.
35 1  MEFFIILLVA VAVFGFSFV VIPQOEHVHV ERLGRFHRAL TAGLNILIPF
51 51  IDRWAYRHSI KEIPLDVPSQ VCITRDNTQL TVDGIIFYQV TDPKLASYGS
101 101 SNYIMAITQL AQTTLRVIG RMELDKTFEE RDEINSTVVA ALDEAAGAWG
151 151 VKVLRYEIKD LVPPQEILRS MQAQITAEER KRARIAESEG RKIEQINLAS
201 201 GQREAEIQQS EGEAQAAVNA SNAEKIARIN RAKGEAESLR LVAEANAFAI
40 251 RQIAAALQTQ GGADAVNLKI AEQYVAAFNN LAKESNTLIM PANVADIGSL
301 301 ISAGMKIIDS SKTAK*

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The following DNA sequence was identified in *N. gonorrhoeae* <SEQ ID 976>:

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g519-1.seq
45 1  ATGGAATTTT TCATTATCTT GTTGGCAGCC GTCGCCGTTT TCGGCTTCAA
51 51  ATCCTTTGTC GTCATCCCCC AGCAGGAAGT CCACGTTGTC GAAAGGCTCG
101 101 GCGGTTTCCA TCGCGCCCTG ACGGCGGTT TGAATATTTT GATTCCCTTT
151 151 ATCGACCGCG TCGCCTACCG CCATTGCTG AAAGAAATCC CTTTAGACGT
201 201 ACCAGCCAG GTCTGCATCA CGCGCGATAA TACGCAATTG ACTGTTGACG
50 251 GCATCATCTA TTTCCAAGTA ACCGATCCCA AACTCGCCTC ATACGGTTTCG
301 301 AGCAACTACA TTATGGCAAT TACCCAGCTT GCCCAAACGA CGCTGCGTTC
351 351 CGTTATCGGG CGTATGGAGT TGGACAAAAC GTTGAAGAA CGCGACGAAA
401 401 TCAACAGTAC CGTCGTCTCC GCCCTCGATG AAGCCGCGG GGCTTGGGGT
451 451 GTGAAAGTCC TCCGTTACGA AATCAAGGAT TTGGTTCCGC CGCAAGAAAT
55 501 CCTTCGCGCA ATGCAGGCAC AAATTACGCG CGAACGCGAA AAACGCGCCC
551 551 GTATTGCCGA ATCCGAAGGC CGTAAATCG AACAAATCAA CTTGCCAGT
601 601 GGTCAATGCG AAGCCGAAAT CCAACAATCC GAAGGCGAGG CTCAGGCTGC
651 651 GGTCAATGCG TCCAATGCCG AGAAAATCG CCGCATCAAC CGCGCCAAAG
701 701 GCGAAGCGGA ATCCTTGCGC CTTGTTGCCG AAGCCAATGC CGAAGCCATC
60 751 CGTCAAATG CCGCGCCCT TCAAACCAA GCGGGGCGG ATGCGGTCAA
801 801 TCTGAAGATT GCGGAACAAT ACGTAGCCGC GTTCAACAAT CTTGCCAAAG

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851 AAAGCAATAC GCTGATTATG CCCGCCAATG TTGCCGACAT CGGCAGCCTG
901 ATTTCTGCCG GCATGAAAT TATCGACAGC AGCAAAACCG CCAATAA

This corresponds to the amino acid sequence <SEQ ID 977; ORF 519-1.ng>:

5 g519-1.pep
1 MEFFFIILLAA VAVFGFKSFV VIFQQEVHVV ERLGRFHRAL TAGLNILIPF
51 IDRVAYKHSI KEIPLDVFSQ VCITRDNTQL TVDGIIFYQV TDPKLASYGS
101 SNYIMAITQL AQTTLRSVIG RMELDKTFEE RDEINSTVVS ALDEAAGAWG
151 VKVLRYEIKD LVFPQEIILRA MQAQITAERE KRARIAESEG RKIEQINLAS
10 201 GQREAEIQQS EGEAQA AVNA SNAEKIARIN RAKGEAESLR LVAEANAEAI
251 RCIAAALQTO GGADAVNLKI AEQYVAAFNN LAKESNTLIM PANVADIGSL
301 ISAGMKIIDS SKTAK*

15 m519-1/g519-1 ORFs 519-1 and 519-1.ng showed a 99.0% identity in 315 aa overlap

	10	20	30	40	50	60
g519-1.pep	MEFFFIILLAAVAVFGFKSFVVI	FPQQEVHVV	ERLGRFHRAL	TAGLNILIPF	IDRVAYKHSI	
m519-1	MEFFFIILLVAVAVFGFKSFVVI	FPQQEVHVV	ERLGRFHRAL	TAGLNILIPF	IDRVAYKHSI	
	10	20	30	40	50	60
	70	80	90	100	110	120
g519-1.pep	KEIPLDVFSQVCITRDNTQLTV	DGIIFYQV	TDPKLASYGSSNYIMAITQL	AQTTLRSVIG		
m519-1	KEIPLDVFSQVCITRDNTQLTV	DGIIFYQV	TDPKLASYGSSNYIMAITQL	AQTTLRSVIG		
	70	80	90	100	110	120
	130	140	150	160	170	180
g519-1.pep	RMELDKTFEERDEINSTVVS	ALDEAAGAWGV	KVLRYEIKDLVFPQEIILRA	MAQAITAERE		
m519-1	RMELDKTFEERDEINSTVVA	ALDEAAGAWGV	KVLRYEIKDLVFPQEIILRA	MAQAITAERE		
	130	140	150	160	170	180
	190	200	210	220	230	240
g519-1.pep	KRARIAESEGRKIEQINLAS	GQREAEIQS	EGEAQA AVNASNAEKIARIN	RAKGEAESLR		
m519-1	KRARIAESEGRKIEQINLAS	GQREAEIQS	EGEAQA AVNASNAEKIARIN	RAKGEAESLR		
	190	200	210	220	230	240
	250	260	270	280	290	300
g519-1.pep	LVAEANAEAIRQIAAALQTO	GGADAVNLKIAEQYVAAFNN	LAKESNTLIMPANVADIGSL			
m519-1	LVAEANAEAIRQIAAALQTO	GGADAVNLKIAEQYVAAFNN	LAKESNTLIMPANVADIGSL			
	250	260	270	280	290	300
	310					
g519-1.pep	ISAGMKIIDS	SKTAKX				
m519-1	ISAGMKIIDS	SKTAKX				
	310					

The following DNA sequence was identified in *N. meningitidis* <SEQ ID 978>:

55 a519-1.seq
1 ATGGAATTTT TCATTATCTT GCTGGCAGCC GTCGTTGTTT TCGGCTTCAA
51 ATCCTTTGTT GTCATCCAC AGCAGGAAGT CCACGTTGTC GAAAGGCTCG
101 GGCCTTTCCA TCGCGCCCTG ACGGCCGCTT TGAATATTTT GATTCCCTTT
151 ATCGACCGCG TCGCCTACCG CCATTGCTG AAAGAAATCC CTTTAGACGT
60 201 ACCGAGCCAG GTCTGCATCA CGCGCGACAA TACGCAGCTG ACTGTTGACG
251 GTATCATCTA TTCCAACTA ACCGACCCCA AACTCGCCTC ATACGGTTCG
301 AGCAACTACA TTATGGCGAT TACCCAGCTT GCCCAAACGA CGCTGCGTTC

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351 CGTTATCGGG CGTATGGAAT TGGACAAAAC GTTTGAAGAA CGCGACGAAA
401 TCACACAGCAC CGTCGTCTCC GCCCTCGATG AAGCCGCCGG AGCTTGGGGT
451 GTGAAGGTTT TCGGTTATGA GATTAAAGAC TTGGTTCCGC CGCAAGAAAT
501 CCTTCGCTCA ATGCAGGCGC AAATTACTGC TGAACGCGAA AACGCGCCCC
551 GTATCGCCGA ATCCGAAGGT CGTAAATCG AACAAATCAA CCTTGCCAGT
601 GGTCAAGCGC AAGCCGAAAT CCAACAATCC GAAGGCGAGG CTCAGGCTGC
651 GGTCAATGCG TCAATGCCG AGAAATCGC CCGCATCAAC CGCGCCAAAG
701 GTCAAGCGGA ATCCTTGCGC CTGTGTCGC AAGCCAATGC CGAAGCCATC
751 CGTCAATG CGCGCGCCCT TCAAACCCAA GCGCTGCGG ATGCGGTCAA
801 TCTGAAGATT GCGGAACAT ACCTCGCCGC GTTCAACAAT CTTGCCAAAG
851 AAGCAATAC GCTGATTATG CCCGCCAATG TTGCCGACAT CGGCAAGCCTG
901 ATTTCTGCCG GTATGAAAT TATCGACAGC AGCAAAACCG CCAATAA

```

This corresponds to the amino acid sequence <SEQ ID 979; ORF 519-1.a>:

15 a519-1.pep.
1 MEFFIILLAA VVVFGRKSFV VIPQEVHV V ERLGRFHRAL TAGLNILIPF
51 IDRVAIRHSL KEIPLDVFSQ VCITRDNTQL TVDGIIFYQV TDPKLASYGS
101 SNYIMAITQL AQTTLRSVIG RMELDKTFEE RDEINSTVVS ALDEAAGAWG
151 VKVLRYEIKD LVPPQEILRS MQAQITAERE KRARIAESEGRKIEQINLAS
201 GQREAEIQQS EGEAQAAVNA SNAEKIARIN RAKGEAESLR LVAEANAIAEI
251 RQIAAALQTC GGADAVNLKI AEQYVAAFNN LAKESNTLIM PANVADIGSL
301 ISAGMKIIDS SKTAK*

25 m519-1/a519-1 ORFs 519-1 and 519-1.a showed a 99.0% identity in 315 aa overlap

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a519-1.pep 10 20 30 40 50 60
MEFFIILLAAVVVFGRKSFVVIPQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSL
|||||:|||||
m519-1 10 20 30 40 50 60
MEFFIILLVAVVVFGRKSFVVIPQEVHVVERLGRFHRALTAGLNILIPFIDRVAYRHSL

a519-1.pep 70 80 90 100 110 120
KEIPLDVFSQVCITRDNTQLTVDGIIFYQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
|||||:|||||
m519-1 70 80 90 100 110 120
KEIPLDVFSQVCITRDNTQLTVDGIIFYQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG

a519-1.pep 130 140 150 160 170 180
RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQQAITAERE
|||||:|||||
m519-1 130 140 150 160 170 180
RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQQAITAERE

a519-1.pep 190 200 210 220 230 240
KRARIAESEGRKIEQINLASGQREAEIQSEGEAQAAVNASNAEKIARINRAKGEAESLR
|||||:|||||
m519-1 190 200 210 220 230 240
KRARIAESEGRKIEQINLASGQREAEIQSEGEAQAAVNASNAEKIARINRAKGEAESLR

a519-1.pep 250 260 270 280 290 300
LVAEANAIAIRQIAAALQTOGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL
|||||:|||||
m519-1 250 260 270 280 290 300
LVAEANAIAIRQIAAALQTOGGADAVNLKIAEQYVAAFNNLAKESNTLIMPANVADIGSL

a519-1.pep 310
ISAGMKIIDSSKTAKX
|||||
m519-1 310
ISAGMKIIDSSKTAKX

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576 and 576-1 gnm22.seq

5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 980>:

```

m576.seq.. (partial)
1 ..ATGCAGCAGG CAACTATGCG GATGGGCGTG GACATCGGAC GCTCCCTGAA
51 GCAATGAAAG GAAAGGGGCG CGGAAATCGA TTTGAAAGTC TTTACCGAAG
101 CCATGCAGGC ACTGTATGAC GGCAAGAGAA TCAAAATGAC CGAAGAGCAG
10 GCTCAGGAAAG TCATGATGAA ATTCTTTCAG GAACAACAGG CTAAGCCGT
201 AGAAAAACAC AAGGCGGACG CGAAGGCCAA TAAAGAAAAA GCGGAAGCCT
251 TTCTGAAAGA AATGCGCGCC AAGACGGCG TGAAGACCAC TGCTTCCGGC
301 CTGCAATACA AATCACCAC ACAGGGCGAA GGCAACAGC CGACCAAGA
351 CGACATCGTT ACCGTGGAAT ACGAAGGCCG CCTGATTGAC GGTACGGTAT
15 401 TCGACAGCAG CAAAGCCAAC GCGGCGCCGG TCACCTTCCC TTTGAGCCAA
451 GTGATTCCCG GTTGACCGA AGCGGTACAG CTTCTGAAAG AAGCGGCGCA
501 AGCCACGTTT TACATCCCGT CCAACCTTGC CTACCGCGAA CAGGGTGGCG
551 GCGACAAAAT CGGTCCGAAC GCCACTTTGG TATTGATGT GAACTGGTC
601 AAAATCGGCG CACCGAAAAA CGCGCCCGCC AAGCAGCCGG CTCAAGTCGA
20 651 CATCAAAAAA GTAAATTAA

```

This corresponds to the amino acid sequence <SEQ ID 981; ORF 576>:

```

m576.pep.. (partial)
1 ..MQQASYAMGV DIGRSLKQMK EQGAEIDLKV FTEAMQAVYD GKEIKMTEEQ
25 51 AQEVMMKFLQ EQQAKAVEKH KADAKANKEK GEAFLENAA KDGVKTTASG
101 LQYKITKQGE GKQPTKDDIV TVEYEGRLID GTVFDSSKAN GGPVTFPLSQ
151 VIFGWTEGVQ LLKEGGEATF YIPSNLAYRE QGAGDKIGFN ATLVFDVKLV
201 KIGAPENAPA KQPAQVDIKK VN*

```

30 The following partial DNA sequence was identified in *N. gonorrhoeae* <SEQ ID 982>:

```

g576.seq.. (partial)
1 ..atggcgctgg acatcggacg ctccctgaaa caaatgaagg aacagggcgc
51 ccaaatcgat ttgaaagtct ttaccgatgc catgcaggca ctgtatgacg
101 gcaaaagaaat caaatgacc gaagagcagg cccaggaagt catgatgaaa
35 151 ttctgcagg agcagcaggc taaagccgta gaaaaacaca aggcggatgc
201 gaaggccaac aaagaaaaag gcgaagcctt cctgaaggaa aatgccgcgc
251 aagacggcgt gaagaccact gcttccggtc tgcagtacaa aatcaccaaa
301 cagggtgaaq gcaaaacagc gcaaaaagac gacatcgta ccgtggata
351 cgaaggccgc ctgattgacg gtaccgtatt cgacgcagc aaagccaacg
40 401 gcgcccgcgc cactttccct ttgagccaag tgattccggg ttgaccgaa
451 gcggtacgac ttctcaaaag aggcggcgaa gccacgttct acatcccgtc
501 caaccttgcc taccgcgaac agcggtgagg cgaaaaaatc ggtccgaacg
551 ccactttggt atttgacgtg aaactggtca aaatcggcgc ccccgaaac
601 gcgcccgcga agcagccgga tcaagtcgac atcaaaaaag taaattaa
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```

This corresponds to the amino acid sequence <SEQ ID 983; ORF 576.ng>:

```

g576.pep.. (partial)
1 ..MGVDIGRSLK QMKEQGAIED LKVFTDAMQA VYDGKEIKMT EEQAQEVMMK
51 FLQEQQAKAV EKHKADAKAN KEKGEAFLKE NAAEDGVKTT ASGLQYKITK
50 101 QGEGKQPTKD DIVTVEYEGR LIDGTVFDSS KANGGPATFP LSQVIPGWTE
151 GVRLLKEGGE ATFYIPSNLA YREQGAGEKI GPNATLVFDV KLVKIGAPEN
201 APAKQPDQVD IKKVN*

```

55 Computer analysis of this amino acid sequence gave the following results:
Homology with a predicted ORF from *N. gonorrhoeae*

m576/g576 97.2% identity in 215 aa overlap

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      10      20      30      40      50      60
m576.pep  MQQASYAMGV DIGRSLKQMK EQGAEIDLKV FTEAMQAVYD GKEIKMTEEQ AQEVMMKFLQ
5  g576      MGVDIGRSLKQMK EQGAEIDLKV FTEAMQAVYD GKEIKMTEEQ AQEVMMKFLQ
      10      20      30      40      50

      70      80      90     100     110     120
m576.pep  EQQAKAVEKEH KADAKANKEKGEAFLKENAA KDGVKTTASGLQYKITKQEGGKQPTKDDIV
10  g576      EQQAKAVEKEH KADAKANKEKGEAFLKENAA KDGVKTTASGLQYKITKQEGGKQPTKDDIV
      60      70      80      90     100     110

      130     140     150     160     170     180
m576.pep  TVEYEGRLIDGT VFDSSKAN GGPVTFPLSQVIPGWTEGVQLLKEGG EATFYIPSNLAYRE
15  g576      TVEYEGRLIDGT VFDSSKAN GGPVTFPLSQVIPGWTEGVRLLEGG EATFYIPSNLAYRE
      120     130     140     150     160     170

      190     200     210     220
m576.pep  QGAGDKIGPNATLVFDVKLVKIGAPENAPAKQPAQVDIKKVN*
20  g576      QGAGDKIGPNATLVFDVKLVKIGAPENAPAKQPDQVDIKKVN*
      180     190     200     210

```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 984>:

```

a576.seq
1  ATGAACACCA TTTTCAAAT CAGCGCACTG ACCCTTTCCG CCGCTTTGGC
51  ACTTTCCGCC TCGGGCAAAA AAGAAGCCGC CCCCGCATCT GCATCCGAAC
30 101  CTGCGCCGCC TTCTTCCGCG CAGGGCGACA CCTCTTCGAT CGGCAGCAGC
151  ATGCAGCAGG CAAGCTATGC GATGGGCGTG GACATCGGAC GCTCCCTGAA
201  GCAAATGAAG GAACAGGGCG CCGAAATCGA TTTGAAAGTC TTTACCGAAG
251  CCATGCAGGC AGTGTATGAC GGCAAAGAAA TCAAATGAC CGAAGAGCAG
301  GCTCAGGAAG TCATGATGAA ATTCTTCAG GAACAACAGG CTAAGCCGT
35 351  AGAAAAACAC AAGGCGGACG CGAAGGCCAA TAAAGAAAAA GGCGAAGCCT
401  TTCTGAAAGA AATGCGCGC AAAGACGGCG TGAAGACCAC TGCTTCCGGC
451  CTGCAATACA AATCACCAA ACAGGGCGAA GGCAAACAGC CGACCAAAGA
501  CGACATCGTT ACCGTGGAAT ACGAAGGCCG CCTGATTGAC GGTACGGTAT
551  TCGACAGCAG CAAGGCCAAC GCGGCGCCGG TCACCTTCCC TTTGAGCCAA
40 601  GTGATTCTGG GTTGGACCGA AGGCGTACAG CTTCTGAAAG AAGGCGGCGA
651  AGCCACGTTT TACATCCCGT CCAACCTTGC CTACCGCGAA CAGGCGCGG
701  GCGACAAAT CGGCCGAAC GCCACTTTGG TATTGATGT GAAACTGGTC
751  AAAATCGGCG CACCCGAAA CGCGCCCGCC AAGCAGCCGG CTCAAGTCGA
45 801  CATCAAAAAA GTAAATTAA

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This corresponds to the amino acid sequence <SEQ ID 985; ORF 576.a>:

```

a576.pep
1  MNTIFKISAL TLSAALALSA CGKKEAAPAS ASEFAAASSA QGDTSSIGST
51  MQQASYAMGV DIGRSLKQMK EQGAEIDLKV FTEAMQAVYD GKEIKMTEEQ
50 101  AQEVMMKFLQ EQQAKAVEKH KADAKANKEK GEAFLENAA KDGVKTTASG
151  LQYKITKQGE GKQPTKDDIV TVEYEGRLID GTVFDSSKAN GGPVTFPLSQ
201  VILGWTEGVQ LLKEGG EATFYIPSNLAYRE QGAGDKIGPN ATLFDVKLV
251  KIGAPENAPA KQPAQVDIKK VN*

55  m576/a576  ORFs 576 and 576.a showed a 99.5% identity in 222 aa overlap

      10      20      30
m576.pep  MQQASYAMGV DIGRSLKQMK EQGAEIDLKV
60  a576      CGKKEAAPAS ASEFAAASSA QGDTSSIGSTM MQQASYAMGV DIGRSLKQMK EQGAEIDLKV
      30      40      50      60      70      80

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		40	50	60	70	80	90
	m576.pep	FTEAMQAVYDGKEIKMTTEEQAQEVMMKFLQEQQAKAVEKHKADAKANKEKGEAFLKENAA					
	a576	FTEAMQAVYDGKEIKMTTEEQAQEVMMKFLQEQQAKAVEKHKADAKANKEKGEAFLKENAA					
5		90	100	110	120	130	140
	m576.pep	KDGVKTTASGLQYKITKQEGEKQPTKDDIVTVEYEGRLIDGTVFDSSKANGGPVTFPLSQ					
10	a576	KDGVKTTASGLQYKITKQEGEKQPTKDDIVTVEYEGRLIDGTVFDSSKANGGPVTFPLSQ					
		150	160	170	180	190	200
	m576.pep	VIFGWTEGVQLLKEGGEATFYIIFSNLAYREQAGDKIGPNATLVFDVKLVKIGAPENAPA					
15	a576	VIFGWTEGVQLLKEGGEATFYIIFSNLAYREQAGDKIGPNATLVFDVKLVKIGAPENAPA					
		210	220	230	240	250	260
	m576.pep	KQFAQVDIKKVN					
20	a576	KQFAQVDIKKVN					
		270					

Further work revealed the following DNA sequence identified in *N. meningitidis* <SEQ ID 986>:

	m576-1.seq	
30	1	ATGAACACCA TTTTCAAAT CAGCGCACTG ACCCTTTCCG CCGCTTTGGC
	51	ACTTTCCGCC TCGCGCAAAA AAGAAGCCGC CCCCGCATCT GCATCCGAAC
	101	CTGCCGCCGC TTCTTCCGCG CAGGCGGACA CCTCTTCGAT CGGCAGCACG
	151	ATGCAGCAGG CAAGCTATGC GATGGGCGTG GACATCGGAC GCTCCCTGAA
	201	GCAATGAAG GAACAGGGCG CGGAATCGA TTTGAAAGTC TTTACCGAAG
	251	CCATGCAGGC AGTGTATGAC GGCAAGAAA TCAAAATGAC CGAAGAGCAG
35	301	GCTCAGGAAG TCATGATGAA ATTCTTCAG GAACAACAGG CTAAGCCGT
	351	AGLAAACAC AAGCGGACG CGAAGGCCA TAAAGAAAA GGCGAAGCCT
	401	TTCTGAAGA AATGCCGCC AAGACGGCG TGAAGACCAC TGCTTCCGGC
	451	CTGCAATACA AATCACCAC ACAGGCGGAA GGCAACAGC CGACCAAGA
	501	CGACATCGTT ACCGTGGAAT ACGAAGGCCG CCTGATTGAC GGTACGGTAT
40	551	TCGACAGCAG CAAGCCAAC GCGGCCCCG TCACCTTCCC TTTAGCCAA
	601	GTGATTCCGG GTTGGACCGA AGCCTACAG CTCTGAAG AAGGCGGCGA
	651	AGCCACGTTT TACATCCCGT CCAACCTTGC CTACCGCGAA CAGGGTGCGG
	701	CGGACAAAT CGGTCCGAAC GCCACTTTGG TATTTGATGT GAACTGGTC
	751	AAATCGGCG CACCCGAAA CGCGCCCGCC AAGCAGCCGG CTCAAGTCGA
45	801	CATCAAAAA GTAAATTAA

This corresponds to the amino acid sequence <SEQ ID 987; ORF 576-1>:

	m576-1.pep	
50	1	MNTIFKISAL TLSAALALSA CGKKEAPAS ASEPAAASSA QGDTSSIGST
	51	MQQASYAMGV FIGRSLKOMK EQGAELDLKV FTEAMQAVYD GKEIKMTEEQ
	101	AQEVMMKFLQ EQQAKAVEKH KADAKANKEK GEAFLENAA KDGVKTTASG
	151	LQYKITKQGE GKQFTKDDIV TVEYEGRLID GTVFDSSKAN GGPVTFPLSQ
	201	VIFGWTEGVQ LLKEGGEATF YIFSNLAYRE QGAGDKIGPN ATLVFDVKLV
55	251	KIGAPENAPA KQFAQVDIKK VN*

The following DNA sequence was identified in *N. gonorrhoeae* <SEQ ID 988>:

	g576-1.seq	
60	1	ATGAACACCA TTTTCAAAT CAGCGCACTG ACCCTTTCCG CCGCTTTGGC
	51	ACTTTCCGCC TCGCGCAAAA AAGAAGCCGC CCCCGCATCT GCATCCGAAC
	101	CTGCCGCCGC TTCTGCCGCG CAGGCGGACA CCTCTTCAAT CGGCAGCACG
	151	ATGCAGCAGG CAAGCTATGC AATGGGCGTG GACATCGGAC GCTCCCTGAA

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201 ACAAATGAAG GAACAGGGCG CGGAAATCGA TTTGAAAGTC TTTACCGATG
251 CCATGCAGGC ACTGTATGAC GGCAAAGAAA TCAAAATGAC CGAAGAGCAG
301 GCCCAGGAAG TGATGATGAA ATTCTGCGAG GAGCAGCAGG CTAAAGCCGT
351 AAAAAACAC AAGGCGGATG CGAAGGCCAA CAAAGAAAAA GGCGAAGCCT
401 TCCTGAAGGA AATGCCGCC AAAGACGGCG TGAAGACCAC TGCTTCCGGT
451 CTGCACTACA AATCACCAC ACAGGGTGAA GGCAAACAGC CGACAAAAGA
501 CGACATCGTT ACCGTGGAAT ACGAAGGCCG CCTGATTGAC GGTACCGTAT
551 TCGACAGCAG CAAAGCCAAC GCGGCCCGG CCACCTTCCC TTTGAGCCAA
601 GTGATTCCGG GTTGACCGA AGGCGTACGG CTTCTGAAAG AAGCGGCGCA
651 AGCCACGTTT TACATCCCGT CCAACCTTGC CTACCGCGAA CAGGGTGCGG
701 GCGAAAAAAT CGGTCCGAAC GCCACTTTGG TATTTGACGT GAACTGGTC
751 AALATCGCG CACCCGAAAA CGCGCCCGCC AAGCAGCCGG ATCAAGTCGA
801 CATCAAAAAA GTAAATTAA

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15 This corresponds to the amino acid sequence <SEQ ID 989; ORF 576-1.ng>:

g576-1.pep

```

1 MNTIFKISAL TLSAALLALSA CGKKEAFAAS ASEFAAASAA QGDTSSIGST
51 MQQASYAMGV DIGRSLKQMK EQGAEIDLKV FTDAMQAVYD GKEIKMTEEQ
101 AQEVMMKFLQ EQQAKAVEKH KADAKANKEK GEAFLENAA KDGVKTTASG
151 LQYKITKQGE GKQPTKDDIV TVEYEGRLID GTVFDSSKAN GGPATFPLSQ
201 VIPGWTEGVR LLKEGGEATF YIPSNLAYKE QGAGEKIGPN ATLVFDVKLV
251 KIGAPENAPA KQPDQVDIKK VN*

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25 g576-1/m576-1 ORFs 576-1 and 576-1.ng showed a 97.8% identity in 272 aa overlap

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	10	20	30	40	50	60
g576-1.pep	MNTIFKISAL	TLSAALLALSA	CGKKEAFAAS	ASEFAAASAA	QGDTSSIGST	MQQASYAMGV
m576-1	MNTIFKISAL	TLSAALLALSA	CGKKEAFAAS	ASEFAAASSA	QGDTSSIGST	MQQASYAMGV

	70	80	90	100	110	120
g576-1.pep	DIGRSLKQMK	EQGAEIDLKV	FTDAMQAVYD	GKEIKMTEEQ	AQEVMMKFLQ	EQQAKAVEKH
m576-1	DIGRSLKQMK	EQGAEIDLKV	FTDAMQAVYD	GKEIKMTEEQ	AQEVMMKFLQ	EQQAKAVEKH

	130	140	150	160	170	180
g576-1.pep	KADAKANKEK	GEAFLENAAK	DGVKTTASGL	LQYKITKQGE	GKQPTKDDIV	TVEYEGRLID
m576-1	KADAKANKEK	GEAFLENAAK	DGVKTTASGL	LQYKITKQGE	GKQPTKDDIV	TVEYEGRLID

	190	200	210	220	230	240
g576-1.pep	GTVFDSSKAN	GGPATFPLSQ	VIPGWTEGVR	LLKEGGEATF	YIPSNLAYRE	QGAGEKIGPN
m576-1	GTVFDSSKAN	GGPVTFPLSQ	VIPGWTEGVR	LLKEGGEATF	YIPSNLAYRE	QAGDKIGPN

	250	260	270
g576-1.pep	ATLVFDVKLV	KIGAPENAPA	KQPDQVDIKK
m576-1	ATLVFDVKLV	KIGAPENAPA	KQPDQVDIKK

The following DNA sequence was identified in *N. meningitidis* <SEQ ID 990>:

a576-1.seq

```

60 1 ATGAACACCA TTTTCAAAAT CAGCGCACTG ACCCTTTCCG CCGCTTTGGC
51 ACTTTCCGCC TGCGGCAAAA AAGAAGCCGC CCCCGCATCT GCATCCGAAC
101 CTGCCGCGCG TTCTCCGCG CAGGGCGACA CCTCTTCGAT CGGCAGCAGC

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151 ATGCAGCAGG CAAGCTATGC GATGGGCGTG GACATCGGAC GCTCCCTGAA
 201 GCAATGAAAG GAACAGGGCG CGGAAATCGA TTTGAAAGTC TTTACCGAAG
 251 CCATGCAGGC AGTCTATGAC GGCAAAGAAA TCAAATGAC CGAAGAGCAG
 301 GCTCAGGAAG TCATGATGAA ATTCTTCAG GAACAACAGG CTAAAGCCGT
 351 AGAAAAACAC AAGGCGGACG CGAAGGCCAA TAAAGAAAAA GGCGAAGCCT
 401 TTCTGAAAGA AAATGCCGCC AAGAGCGGCG TGAAGACCAAC TGCTTCCGGC
 451 CTGCAATACA AAATCACCAA ACAGGGCGAA GGCAACAGC CGACCAAGA
 501 CGACATCGTT ACCCTGGAAT ACGAAGGCCG CCTGATTGAC GGTACGGTAT
 551 TCGACAGCAG CAAGGCCAAC GGCGGCCCGG TCACCTTCCC TTTGAGCCAA
 601 GTGATTCGTG GTTGGACCGA AGGCGTACAG CTTCTGAAAG AAGGCGGCGA
 651 AGCCACGTTT TACATCCCGT CCAACCTTGC CTACCGCGAA CAGGCTGCGG
 701 GCGACAAAAT CGGCCCGAAC GCCACTTTGG TATTTGATGT GAACTGGTC
 751 AAAATCGGCG CACCCGAAA CGCGCCCGCC AAGCAGCCGG CTCAAGTCGA
 801 CATCAAAAAA GTAAATTAA

This corresponds to the amino acid sequence <SEQ ID 991; ORF 576-1.a>:

a576-1.pep
 1 MNTIFKISAL TISAALALSA CGKKEAAPAS ASEPAASSA QGDTSSIGST
 51 MQQASYAMGV IIGKSLKQMK EQGAEIDLKV FTEAMQAVYD GKEIKMTEEQ
 101 AQEVMMKFLQ EQQAKAVEKH KADAKANKEK GEAFLENAA KDGVKTTASG
 151 LQYKITKQGE GKQPTKDDIV TVEYEGRLID GTVFDSSKAN GGPVTFPLSQ
 201 VILGWTEGVQ LLKEGGEATF YIPSNLAYRE QGAGDKIGPN ATLVFDVKLV
 251 KIGAPENAPA KQPAQVDIKK VN*

a576-1/m576-1 ORFs 576-1 and 576-1.a 99.6% identity in 272 aa overlap

		10	20	30	40	50	60
a576-1.pep		MNTIFKISAL	TISAALALSA	CGKKEAAPAS	ASEPAASSA	QGDTSSIGST	MQQASYAMGV
m576-1		MNTIFKISAL	TISAALALSA	CGKKEAAPAS	ASEPAASSA	QGDTSSIGST	MQQASYAMGV
		10	20	30	40	50	60
		70	80	90	100	110	120
a576-1.pep		IIGKSLKQMK	EQGAEIDLKV	FTEAMQAVYD	GKEIKMTEEQ	AQEVMMKFLQ	EQQAKAVEKH
m576-1		IIGKSLKQMK	EQGAEIDLKV	FTEAMQAVYD	GKEIKMTEEQ	AQEVMMKFLQ	EQQAKAVEKH
		70	80	90	100	110	120
		130	140	150	160	170	180
a576-1.pep		KADAKANKEK	GEAFLENAA	KDGVKTTASG	LQYKITKQGE	GKQPTKDDIV	TVEYEGRLID
m576-1		KADAKANKEK	GEAFLENAA	KDGVKTTASG	LQYKITKQGE	GKQPTKDDIV	TVEYEGRLID
		130	140	150	160	170	180
		190	200	210	220	230	240
a576-1.pep		CTVFDSSKAN	GGPVTFPLSQ	VILGWTEGVQ	LLKEGGEATF	YIPSNLAYRE	QGAGDKIGPN
m576-1		CTVFDSSKAN	GGPVTFPLSQ	VILGWTEGVQ	LLKEGGEATF	YIPSNLAYRE	QGAGDKIGPN
		190	200	210	220	230	240
		250	260	270			
a576-1.pep		ATLVFDVKLV	KIGAPENAPA	QPAQVDIKK	VNX		
m576-1		ATLVFDVKLV	KIGAPENAPA	QPAQVDIKK	VNX		
		250	260	270			

919 and 919-2 gnm43.seq

60

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The following partial DNA sequence was identified in *N.meningitidis* <SEQ ID 992>:

```

m919.seq
1  ATGAAAAAAT ACCTATTCCG CGCCGCCCTG TACGGCATCG CCGCCGCCAT
5  51  CCTCGCCGCC TGCCAAAGCA AGAGCATCCA AACCTTTCCG CAACCCGACA
    101  CATCCGTCAT CAACGGCCCG GACCGGCCGG TCGGCATCCC CGACCCCGCC
    151  GGAACGACGG TCGCGCGCGG CGGGGCCGTC TATACCGTTG TACCGCACCT
    201  GTCCCTGCCC CACTGGGCGG CGCAGGATTT CGCCAAAAGC CTGCAATCCT
    251  TCCGCCCTCG CTGCGCCAAT TTGAAAACC GCCAAGGCTG GCAGGATGTG
10  301  TCGCGCCAAG CCTTTCAAAC CCCGTCAT TCCTTTTCAAG CAAAACAGTT
    351  TTTTGAACGC TATTTACGCG CGTGGCAGGT TGCAGGCAAC GGAAGCCTTG
    401  CCGGTACGGT TACCGGCTAT TACGAACCGG TGCTGAAGGG CGACGACAGG
    451  CGGACGGCAC AAGCCCGCTT CCCGATTTAC GGTATTTCCG ACGATTTTAT
    501  CTCCGTCCCC CTGCCTGCCG GTTTGCGGAG CGGAAAAGCC CTGTCCCGCA
15  551  TCAGGCAGAC GGGAAAAAAC AGCGGCACAA TCGACAATAC CGCGGCACAA
    601  CATACCGCCG ACCTCTCCCG ATTCCCATC ACCGCGCGCA CAACAGCAAT
    651  CAAAGGCAGG TTTGAAGGAA GCGCTTCCT CCCCTACCAC ACGCGCAACC
    701  AATCAACGG CGCGCGCTT GACGGCAAAG CCCCGATACT CGGTTACGCC
    751  GAAGACCTG TCGAACTTTT TTTTATGCAC ATCCAAGGCT CGGGCCGTCT
20  801  GAAACCCCG TCCGGCAAAT ACATCCGCAT CGGCTATGCC GACAAAACG
    851  AACATCCYTA CGTTTCCATC GGAACGTATA TGGCGGATAA GGCCTACCTC
    901  AAACCTCGAC AAACCTCCAT GCAGGGCATT AAGTCTTATA TCGGGCAAAA
    951  TCCGCAACGC CTGCGCGAAG TTTTGGGTCA AAACCCAGC TATATCTTTT
25  1001  TCCCGAGCT TCGCGGAGC AGCAATGACG GCCCTGTCGG CGCACTGGGC
    1051  ACGCCGCTGA TGGGGGAATA TGCCGGCGCA GTCGACCGGC ACTACATTAC
    1101  CTTGGGTGCG CCCTTATTTG TCGCCACCGC CCATCCGGTT ACCCGCAAAG
    1151  CCTCAACCG CCGTATTATG GCGCAGGATA CCGGCAGCGC GATTAAAGGC
    1201  GCGGTGCGCG TGGATTATTT TTGGGGATAC GGCGACGAAG CCGCGCAACT
    1251  TCCCGGCAA CAGAAAACCA CGGGATATGT CTGGCAGCTC CTACCCAACG
30  1301  GTATGAAGCC CGAATACCGC CCGTAA

```

This corresponds to the amino acid sequence <SEQ ID 993; ORF 919>:

```

m919.pep
35  1  MKKYLFRAL YGIAAAILAA CQSKSIQTFP QPDTSVINGP DRPVGIPDPA
    51  GTTVGGGGAV YTVVFHLELP HWAAQDFAKS LQSFRLGCAN LKNRQGWODV
    101  CAQAFQTPVH SFQAKQFFER YFTPWOVAGN GSLAGTVTGY YEPVLKGGDR
    151  FTAQARFPIY GIPDDFISVP LFAGLRSGKA LVRIQTGKN SGTIDNTGTT
40  201  ETADLSRFFI TARTTAIKGR FEGRSFLFYH TRNQINGGAL DGKAFILGYA
    251  EDPVELFFMH IQSGRLKTF SGKYIRIGYA DKNEHPYVSI GRYMADKGYL
    301  KLGQTSMQGI KSYMROPQR LAEVLGQNFY YIFFRELAGE SNDGFPVGALG
    351  TFLMGEYAGA VDRHYITLGA PLFVATAHPV TRKALNRLIM AQDTGSAIKG
45  401  AVRVDYFWGY GDEAGELAGK QKTTGYVWQL LPNGMKPEYR P*

```

45 The following partial DNA sequence was identified in *N.meningitidis* <SEQ ID 994>:

```

m919-2.seq
1  ATGAAAAAAT ACCTATTCCG CGCCGCCCTG TACGGCATCG CCGCCGCCAT
50  51  CCTCGCCGCC TGCCAAAGCA AGAGCATCCA AACCTTTCCG CAACCCGACA
    101  CATCCGTCAT CAACGGCCCG GACCGGCCGG TCGGCATCCC CGACCCCGCC
    151  GGAACGACGG TCGCGCGCGG CGGGGCCGTC TATACCGTTG TACCGCACCT
    201  GTCCCTGCCC CACTGGGCGG CGCAGGATTT CGCCAAAAGC CTGCAATCCT
    251  TCCGCCCTCG CTGCGCCAAT TTGAAAACC GCCAAGGCTG GCAGGATGTG
    301  TCGCGCCAAG CCTTTCAAAC CCCGTCAT TCCTTTTCAAG CAAAACAGTT
55  351  TTTTGAACGC TATTTACGCG CGTGGCAGGT TGCAGGCAAC GGAAGCCTTG
    401  CCGGTACGGT TACCGGCTAT TACGAACCGG TGCTGAAGGG CGACGACAGG
    451  CGGACGGCAC AAGCCCGCTT CCCGATTTAC GGTATTTCCG ACGATTTTAT
    501  CTCCGTCCCC CTGCCTGCCG GTTTGCGGAG CGGAAAAGCC CTGTCCCGCA
    551  TCAGGCAGAC GGGAAAAAAC AGCGGCACAA TCGACAATAC CGCGGCACAA

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601 CATACCGCCG ACCTCTCCCG ATTCCCCATC ACCGCGCGCA CAACAGCAAT
 651 CAAGCGCAGG TTGAGAGGAA GCCGCTTCCT CCCCTACCAC ACGCGCAACC
 701 AATCAACCG CGCGCGGCTT GACGGCAAAG CCCCGATACT CGGTACGCC
 751 GAGACCCCTG TCGAATTTT TTTTATGCAC ATCCAAGGCT CGGGCCGCT
 801 GAAACCCCG TCCGGCAAT ACATCCGCAT CGGCTATGCC GACAAAACG
 851 AACATCCCA CGTTTCCATC GGACGTATA TGGCGGATAA GGGCTACCTC
 901 AAATCGGAC AACCTCCAT GCAGGGCATT AACTCTTATA TCGCGCAAAA
 951 TCCGCAACGC CTCGCCGAG TTTTGGGTCA AAACCCAGC TATATCTTT
 1001 TCCGCGAGCT TCGCGGAGC AGCAATGACG GCCCTGTCG CGCACTGGGC
 1051 ACGCCGCTGA TGGGGGAATA TCGCGCGCA ATCGACCGC ACTACATTAC
 1101 CTTGGGTGCG CCTTATTTG TCGCCACCGC CCATCCGCTT ACCCGCAAAG
 1151 CCTCAACCG CCGATTATG GCGCAGGATA CCGCGAGCGC GATTAAAGGC
 1201 GCGGTGCGCG TGGATTATTT TTGGGGATAC GCGCAGGAG CCGCGCAACT
 1251 TCGCGCAAA CAGAAAACA CGGATATGT CTGGCAGCTC CTACCCAACG
 1301 GTATGAGGCC CGAATACCGC CCGTAA

This corresponds to the amino acid sequence <SEQ ID 995; ORF 919-2>:

m919-2.pep
 1 MKKYLFRAL YGIAAAILAA CQSKSIOTFP QPDTSVINGF DRPVGIFDPA
 51 GPTVGGGAV YTVVPHLSLP HWAADFAKS LQSFRLGCAN LKNRQGWQDV
 101 CAQAFQTFVH SFQAKOFFER YTFPWQVAGN GSLAGTVTGY YEPVLKGGDR
 151 RTAQARFELY GTFDDFISVP LFAGLRSEKA LVRIRQTGKN SGTIDNTGGT
 201 HTADLSRFPI TARTTAIKGR PEGSRFLFYH TRNQJINGGAL DKGAPILGYA
 251 ELPVILFFMH IQSGSLKTF SGKYIKIGYA DKNEHFYVSI CRYMADKGYL
 301 KLGQTSMQCI KSYMQRNFOR LAEVLGQNF S YIFFRELGS SNGPVGALG
 351 TFLMGEVAGA VDRNYTLGA FLFVATAHPV TRKALNKLIM AODTGSALKG
 401 AVRVDYFWGY GDEAGELAGK OKTTGYVWQL LPNGMKFEYR P*

The following partial DNA sequence was identified in *N.gonorrhoeae* <SEQ ID 996>:

g919.seq
 1 ATGAAAAAC ACCTGCTCCG CTCGCCCTG TACGGcatCG CCGCCgccAT
 51 CctcgCCGCC TGCCAAAgca gGAGCATCCA AACCTTTCCG CAACCCGACA
 101 CATCCGTCAT CAACGGCCCG GACCGCCCG CCGGCATCCC GACCCCGCC
 151 GGAACGACCG TTGCGGGCGG CGGGGCCGTC TATACCGTTG TGCCGCACCT
 201 GTCCATGCCC CACTGGGCGG CGCaggATTT TGCCAAAAGC CTGCAATCCT
 251 TCCGCCCTCG CTGCCCAAT TTGAAAAACC GCCAAGGCTG GCAGGATGTG
 301 TCGGCCCAAG CCTTTCAAAC CCCCGTGCAT TCCTTTCAGG CAAAGcGgTT
 351 TTTTGAACCG TATTTACGCG cgtGGCagg tgcaggcaAC GGAAGcCTTG
 401 CaggtaaggT TACCGGCTAT TACGAACCG TGCTGAAGGG CGACGGCAGG
 451 CGGACGGAAC GGCCCGGCTT CCCGATTTAC GGTATTCCCG ACCGATTTTAT
 501 CTCGCTCCCG CTGCTTCCCG GTTGGCGGG CGGAAAAAAC CTGTCCGCA
 551 TCAGGCAGac gggGAAAAAC AGCGGCACGA TCGACAATGC CGGCGGCACG
 601 CATACCGCCG ACCTCTCCCG ATTCCCCATC ACCGCGCGCA CAACGGcaat
 651 caaGGCAGG TTTGAaggAA GCCGCTTCCT CCTTACCAC ACGCGCAACC
 701 AAAtcaacGG CGCGcgctT GACGGCAAg cccCATCCT CggttacgcC
 751 GAagaccCG tcaacttTT TTTTATGCAC AtccaaggCT CGGGCCGCT
 801 GAAACCCCG tccggcaat acatCCGCat cggatagcc gacAAAAACG
 851 AACatccgTe tgtttccatc ggACGctATA TGGCGGACAA AGGCTACCTC
 901 AAGctcgggc agACCTCGAT GCAGGcctac aaagcCTATA TCGCGCAAAA
 951 TCCGCAACGC CTCGCCGAG TTTTGGGTCA AAACCCAGC TATATCTTT
 1001 TCCGCGAGCT TCGCGGAGC GGCAATGAGG GCCCGTCCG CGCACTGGGC
 1051 ACGCCACTGA TGGGGGAATA CGCCGGCGCA ATCGACCGGC ACTACATTAC
 1101 CTTGGGCGCG CCTTATTTG TCGCCACCGC CCATCCGCTT ACCCGCAAAG
 1151 CCTCAACCG CCGATTATG GCGCAGGATA CAGGACGCGC GATCAAGGC
 1201 GCGGTGCGCG TGGATTATTT TTGGGGTTAC GCGCAGGAG CCGCGCAACT
 1251 TCGCGCAAA CAGAAAACA CGGATACGT CTGGCAGCTC CTGCCCAACG
 1301 GCATGAAGCC CGAATACCGC CCGTGA

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This corresponds to the amino acid sequence <SEQ ID 997; ORF 919.ng>:

```

g919.pep
1  MKKHLRLSAL YGIAAAILAA CQSRSIQTFP QPDTSVINGP DRPAGIPDDPA
5  51  GTTVAGGGAV YTVVPHLSMP HWAADFAKS LQSFRLGCAN LKNRQGWQDV
101 CAQAFQTFVH SFOAKRFFER YFTPWQVAGN GSLAGTVTGY YEPVLKGDGR
151 RTERARFPIY GIFDDFISVP LPAGLRGGKN LVRIROTGKN SGTIDNAGGT
201 HTADLSRFFI TARTTAIKGR FEGRFLPYH TRNQINGGAL DGKAPILGYA
251 EDFVELFFMH IQSGRLKTP SGKYIRIGYA DKNEHPYVSI GRYMADKGYL
301 KLGQTSMOGI KAYMRQNPQR LAEVLGONPS YIFFRELAGS GNEGPGVAGLG
10  351 TPLMGEYAGA IDRHYITLGA FLFVATAHPV TRKALNRLIM AQTGSAIKG
401 AVRVDYFWGY GDEAGELAGK OKTTGYVWQL LPNGMKFEYR P*

```

ORF 919 shows 95.9 % identity over a 441 aa overlap with a predicted ORF (ORF 919.ng)
from *N. gonorrhoeae*:

```

m919/g919
10      20      30      40      50      60
m919.pep MKKYLFRAAALYGIAAAILAACQSKSIOTFFQPDTSVINGPDRPVGIPDPAGTTVGGGGAV
20  |||||:|:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||
g919      MKKHLRLSALYGIAAAILAACQSRSIQTFPQPDTSVINGPDRPAGIPDPAGTTVAGGGAV
10      20      30      40      50      60

70      80      90      100     110     120
m919.pep YTVVPHLSLPHWAAQDFAKSLQSFRLGCANLKNRQGWQDVCQAQAFQTFVHVSFOAKOFFER
25  |||||:|:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||
g919      YTVVPHLSLPHWAAQDFAKSLQSFRLGCANLKNRQGWQDVCQAQAFQTFVHVSFOAKRFFER
70      80      90      100     110     120

130     140     150     160     170     180
m919.pep YFTPWQVAGNGSLAGTVTGYEYFVLKGDGRRTAQARFPIYGIFFDDFISVFLPAGLRSGKA
30  |||||:|:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||
g919      YFTPWQVAGNGSLAGTVTGYEYFVLKGDGRRTAQARFPIYGIFFDDFISVFLPAGLRGGKN
130     140     150     160     170     180

190     200     210     220     230     240
m919.pep LVRIROTGKNSGTIDNTGGTHTADLSRFFITARTTAIKGRFEGRFLPYHTRNQINGGAL
40  |||||:|:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||
g919      LVRIROTGKNSGTIDNAGGTHADLSRFFITARTTAIKGRFEGRFLPYHTRNQINGGAL
190     200     210     220     230     240

250     260     270     280     290     300
m919.pep DGKAPILGYAEDFVELFFMHIIQSGRLKTPSGKYIRIGYADKNEHPYVSI GRYMADKGYL
45  |||||:|:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||
g919      DGKAPILGYAEDFVELFFMHIIQSGRLKTPSGKYIRIGYADKNEHPYVSI GRYMADKGYL
250     260     270     280     290     300

310     320     330     340     350     360
m919.pep KLGQTSMOGI KSYMQRNPQRLAEVLGONPSYIFFRELAGSSNDGPVAGLGTPLMGEYAGA
50  |||||:|:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||
g919      KLGQTSMOGI KAYMRQNPQRLAEVLGONPSYIFFRELAGSGNEGPGVAGLGTPLMGEYAGA
310     320     330     340     350     360

370     380     390     400     410     420
m919.pep VDRHYITLGAPLFLVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
55  |||||:|:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||
g919      IDRHYITLGAPLFLVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
370     380     390     400     410     420

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              430      440
m919.pep      OKTTGYVWQLLPNGMKPEYRFX
              |||||
5             g919      OKTTGYVWQLLPNGMKPEYRFX
              430      440

```

The following partial DNA sequence was identified in *N.meningitidis* <SEQ ID 998>:

```

10      a919.seq
        1  ATGAAAAAA? ACCTATTCCG CGCGCCCTG TGCGGCATCG CCGCCGCCAT
          51 CCTCGCCGCC TGCCAAAGCA AGAGCATCCA AACCTTTCCG CAACCCGACA
        101 CATCCGTCAT CAACCGCCCG GACCGGCCG TCGGCATCCC CGACCCCGCC
          151 GGAACGACGG TCGCGGCCG CGGGGCCGTT TATACCGTTC TGCCGCACCT
        15      201 GTCCCTGCC CACTGGGCGG CGCAGGATT CGCCAAAGC CTGCAATCCT
          251 TCCGCTCGCG CTGCGCCAA? TTGAAAAACC GCCAAGGCTG GCAGGATGTG
          301 TGCGGCCAAG CTTTTCAAAC CCCGTCCTAT TCCGTTTAGG CAAPACAGTT
          351 TTTTGAACGC TATTTCACGC CGTGGCAGGT TGCAGGCAAC GGAAGCCTTG
          401 CCGGTACGGT TACCGGCTAT TACGAGCCGG TGCTGAAGGG CGACGACAGG
        20      451 CGGACGCGAC AAGCCCGCTT CCCGATTAC GGTATTCCCG ACGATTTTAT
          501 CTCCGTCCCC CTGCTGCCG GTTTCGGAG CGGAAAAGCC CTGTCCGCA
          551 TCAGGCAGAC GGGAAAAAC AGCGCACAA TCACAATAC CGGCGGCACA
          601 CATACGCGG ACCTCTCCA ATTCCCATC ACTGCGCGCA CAACGGCAAT
          651 CAAGGCAGG TTTGAAGGAA GCGCTTCCT CCCCTACCAC ACGCGCAACC
        25      701 AATCAACGG CGGCGCGCTT GACGGCAAG CCCCGTACT CGGTTACGCC
          751 GAAAGCCCGG TCGAACTTTT TTTTATGCAC ATCAAAGGCT CGGCGCGTCT
          801 GAAAAACCCG TCCGGCAAT ACATCCGCAT CGGCTATGCC GACAAAAACG
          851 AACATCCCTA CGTTTCCATC GGACGCTATA TGGCGGACAA AGGCTACCTC
          901 AAGCTCGGCG AGACCTCGAT GCAGGGCATC AAGCCTATA TGCAGCAAAA
        30      951 CCGCGAACCG CTGCGCGAAG TTTTGGGGCA AAACCCAGC TATATCTTTT
        1001 TCCGAGAGCT TACCGGAAGC AGCAATGACG GCCCTGTCGG CGCACTGGGC
        1051 ACGCCGCTGA TGGGCGAGTA CGCCGGCGCA GTCGACCGGC ACTACATTAC
        1101 CTTGGGCGCG CCCTTATTTG TCGCCACCGC CCATCCGGTT ACCCGCAAAG
        1151 CCCTCAACCG CCTGATTATG GCGCAGGATA CCGGACGCGC GATTAAAGGC
        35      1201 GCGGTGCGCG TGGATTATTT TTGGGGATAC GCGGACGAAG CCGGCGAACT
        1251 TGCCGGCAAA CAGAAACCA CGGGATATGT CTGGCAGCTT CTGCCCAACG
        1301 GTATGAAGCC CGAATACCGC CCGTAA

```

This corresponds to the amino acid sequence <SEQ ID 999; ORF 919.a>:

```

40      a919.pep
        1  MKKYLFRAL CGIAAILAA CQSKSIQTFF QPDTSVINGP DRPVGIPDPA
          51 GTTVGGGGAV YTVVPHLSLF HWAAQDFAKS LQSFRLGCAN LKNRQGWQDV
        101 CAQAFQTPVE SVQAKQFFER YFTFWQVAGN GSLAGTVTGY YEPVLKGDDE
        45      151 RTAQAFFFIY GTFDDFISVP LPAGLASGKA LVRIRQTGKN SGTIDNTGGT
          201 HTALLSQFPI TARTTAIKGR FEGRFLFYH TRNQINGGAL DGKAFILGYA
          251 EDPVELFFMH IQSGRLKTP SGKYIRIGYA DKNEHPYVSI GRYMADKGYL
          301 KLGQTSMQGI KAYMQONPQR LAEVLGONFS YIFFRELTGS SNDGFWGALG
          351 TFLMGEYAGA VDRHYITLGA PLFVATAHFV TRKALNRLIM AQDTGSAIKG
        50      401 AVRVDYFWGY GDEAGELAGK OKTTGYVWQL LPNGMKPEYR P*

```

m919/a919 ORFs 919 and 919.a showed a 98.6% identity in 441 aa overlap

```

              10      20      30      40      50      60
m919.pep      MKKYLFRALYGIAAAILAACQSKSIQTFFQPDTSVINGPDRPVGIPDPAGTTVGGGGAV
              |||||
55      a919      MKKYLFRALCGIAAILAACQSKSIQTFFQPDTSVINGPDRPVGIPDPAGTTVGGGGAV
              10      20      30      40      50      60

              70      80      90      100     110     120
m919.pep      YTVVPHLSLFHWAAQDFAKSLQSFRLGCANLKNRQGWQDVCAQAFQTPVHSFOAKQFFER
              |||||
60      a919      YTVVPHLSLFHWAAQDFAKSLQSFRLGCANLKNRQGWQDVCAQAFQTPVHSVQAKQFFER

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		70	80	90	100	110	120
		130	140	150	160	170	180
5	m919.pep	YFTPWQVAGNGSLAGTVTGYYPVLKGD	DRRTAQARFFIYGIPDDFISVPLPAGLR	SGKA			
	a919	YFTPWQVAGNGSLAGTVTGYYPVLKGD	DRRTAQARFFIYGIPDDFISVPLPAGLR	SGKA			
		130	140	150	160	170	180
10	m919.pep	LVRIRQTGKNSGTIDNTGGTHTADLSAFP	ITARTTAIKGRFEGSRFLPYHTRNQING	GAL			
	a919	LVRIRQTGKNSGTIDNTGGTHTADLSAFP	ITARTTAIKGRFEGSRFLPYHTRNQING	GAL			
		190	200	210	220	230	240
15	m919.pep	DGKAFILGYAEDPVELFFMHIQCSGRLK	TPSGKYIRIGYADKNEHPYVSI	GRYMADKGYL			
	a919	DGKAFILGYAEDPVELFFMHIQCSGRLK	TPSGKYIRIGYADKNEHPYVSI	GRYMADKGYL			
		250	260	270	280	290	300
20	m919.pep	KLQGTSMQGIKSYMQRNPQRLAEVLGQ	NPSYIFFREL	AGSSNDG	FPV	GAL	CTFLMGEYAGA
	a919	KLQGTSMQGIKSYMQRNPQRLAEVLGQ	NPSYIFFREL	AGSSNDG	FPV	GAL	CTFLMGEYAGA
25		310	320	330	340	350	360
	m919.pep	VDRHYITLGAFLFVATAHPVTRKALNRL	IMAQDTGSAIKGAVRVDYFWGYGDEAG	ELAGK			
	a919	VDRHYITLGAFLFVATAHPVTRKALNRL	IMAQDTGSAIKGAVRVDYFWGYGDEAG	ELAGK			
		370	380	390	400	410	420
30	m919.pep	QKTTGYVWQLLPNGMKPEYRPX					
	a919	QKTTGYVWQLLPNGMKPEYRPX					
35		430	440				
40	121 and 121-1						

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1000>:

45	m121.seq	1	ATGGAACAC	AGCTTTACAT	CGGCATCATG	TCGGGAACCA	GCATGGACGG
		51	GGCGGATGCC	GTACTGATAC	GGATGGACGG	CGGCAAATGG	CTGGGCGCGG
		101	AAGGACACGC	CTTTACCCCC	TACCCCGGCA	GGTTACGCCG	CCAATTGCTG
		151	GATTTCAGG	ACACAGGCGC	AGACGAACTG	CACCGCAGCA	GGATTTGTC
		201	GCAAGAACTC	AGCCGCCTAT	ATGCGCAAAC	CGCCGCCGAA	CTGCTGTGCA
50		251	GTCAAAACCT	CGCACCGTCC	GACATTACCG	CCCTCGGCTG	CCACGGGCAA
		301	ACCGTCCGAC	ACGCGCCGGA	ACACGGTTAC	AGCATACAGC	TTGCCGATTT
		351	GCCGCTGCTG	GCGxxxxxxx	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx
		401	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx
		451	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx
55		501	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx
		551	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx
		601	xxxxxxCAGC	TTCTTACGA	CAAAAACGGT	GCAAAGTCGG	CACAAGGCAA
		651	CATATTGCCG	CAACTGCTCG	ACAGGCTGCT	CGCCACCCG	TATTTGCGAC
		701	AACGCCACCC	TAAAGCACG	GGGCGCGAAC	TGTTTGCCAT	AAATTGGCTC
60		751	GAAACCTACC	TTGACGGCGG	CGAAAACCGA	TACGACGTAT	TGCGGACGCT
		801	TTCCGTTTT	ACGCGCAAA	CCGTTGCGA	CGCCGTCTCA	CACGCAGCGG

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801 CAGATGCCCG TCAATGTAC ATTTGCGACG GCGGCATCCG CAATCCTGTT
 901 TTAATGGCGG ATTTGGCAGA ATGTTTCGGC ACACGCGTTT CCCTGCACAG
 951 CACCGCCGAC CTGAACCTCG ATCCGCAATG GGTGGAAGCC GCCGnATTG
 1001 CGTCGTTGGC GCGCTGTTGG ATTAATCGCA TTCCCGGTAG TCCGCACAAA
 1051 GCAACCGCG CATCCAAACC GTGTATTCTG AnCGCGGGAT ATTATTATTG
 1101 A

This corresponds to the amino acid sequence <SEQ ID 1001; ORF 121>:

m121.pep
 1 METQLYIGIM SGTSMGADA VLIRMDGGKW LGAEGHAFTP YPGRLRRLQLL
 51 DLQDTGADL HRSRILSQIL SRIVACTAAE LLCSONLAPS DITALGCHGQ
 101 TVRHAFPEHY SIQLADLFL AXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX
 151 XXXXXXXXXXX XXXXXXXXXXX XXXXXXXXXXX XXXXXXXXXXX XXXXXXXXXXX
 201 XXQLPYDKNG AKSAQGNILP QLLDKLLAHP YFAQRHPKST GRELFAINWL
 251 ETYLDGGENR YDVLKTLRF TAQTVCDAYS HAAADARQMY ICDGGIRNPV
 301 LMADLAECFG TRVSLHSTAD LNLDPQWVEA AXFAWLAACW INRI PGSPHK
 351 ATGASKPCIL XAGYYY*

The following partial DNA sequence was identified in *N. gonorrhoeae* <SEQ ID 1002>:

g121.seq
 1 ATGGAAACAC AGCTTTACAT CGGCATTATG TCGGGAACCA GTATGGACGG
 51 GCGCGATGCC GTGCTGGTAC GGATCGACGG CGGCAATGG CTGGGCGCGG
 101 AAGGGCAGCC CTTTACCCCC TACCTGACC GGTTCGCGC CAAATTGCTG
 151 GATTTGCAGG ACACAGGCAC AGACGAACTG CACCGCAGCA GGATGTTGTC
 201 GCAAGAACTC AGCCGCTGT ACAGCGCAAC CGCCGCCGAA CTGCTGTGCA
 251 GTCAAAACCT CECTCCGTGC GACATTACCG CCCTCGGCTG CCACGGGCAA
 301 ACCGTCCGAC AGCCGCCGGA ACACGGTtac AGCATACAGC TTGCCGATTT
 351 GCGGCTGCTG GCGGAACTGa cgcgcatttT TACCGTCggc gacttcCGCA
 401 GCGCGACCT TGCTGCGGCG GgacAGGTG CGCCGCTCGT CCGGCGCTTT
 451 CACGAAGCCC TGTTCGCGA TGACAGGGA ACACGCTGG TACTGAACAT
 501 CCGCGGATT GCCAATATCA GCGTACTCCC CCGCGCGCA CCGGCTTTCG
 551 GCTTCGACAC AGGGCCGGGC AATATGCTGA TGGACgcgtg gacgcaggca
 601 cactGGcagc TGCTTACGA CAAALAcggt gcAAAGgcg cacaAGGCAA
 651 catatTGcgg CAACTGCTCG gcagcgtGCT CCGCaccCG TATTTCTCAC
 701 AACCCcacc aaAAAGCACG GGCcGCGaac TctttgcccT AAttggtc
 751 gaaacctAcc ttgacggcgg cgaaccaccg tacgacgtat tgcggacgct
 801 tccccgattc accgcgcgaa cccTttcga cgcggtctca CACGCAGCGG
 851 CAGATGCCCG TCAATGTAC ATTTGCGGCG GCGGCATCCG CAATCCTGTT
 901 TTAATGGCGG ATTTGGCAGA ATGTTTCGGC ACACGCGTTT CCCTGCACAG
 951 CACCGCCGAA CTGAACCTCG ATCCTCAATG GGTGGAGGCG gccgCATTtg
 1001 ctcgcttggc GCGTGTGG ATTAACCGCA TTCCCGGTAG TCCGCACAAA
 1051 GCGACCGCG CATCCAAACC GTGTATTCTG GCGCGGGAT ATTATTATTG
 1101 A

This corresponds to the amino acid sequence <SEQ ID 1003; ORF 121.ng>:

g121.pep
 1 METQLYIGIM SGTSMGADA VLIRMDGGKW LGAEGHAFTP YPDLRRKLL
 51 DLQDTGTDEL HRSRMLSQEL SRIVAQTAEE LLCSONLAPC DITALGCHGQ
 101 TVRHAFPEHY SIQLADLFL AELTRIFTVG DFRSRDLAAG GQGAPLVPAF
 151 HEALFKDDRE TRVVLNIGGI ANISVLFFGA PAFGFDTGPG NMLMDAWTQA
 201 HWQLPYDKNG AKAAQGNILP QLLGRLLAHP YFSQPHPKST GRELFALNWL
 251 ETYLDGGENR YDVLKTLRF TAQTVWDAYS HAAADARQMY ICGGGIRNPV
 301 LMADLAECFG TRVSLHSTAE LNLDPQWVEA AAFWLAACW INRI PGSPHK
 351 ATGASKPCIL GAGYYY*

ORF 121 shows 73.5% identity over a 366 aa overlap with a predicted ORF (ORF121.ng) from *N. gonorrhoeae*:

m121/g121
 60

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		10	20	30	40	50	60
	m121.pep	METQLYIGIMSGTSMDCADAVLIRMDGGKWLGAEGHAFTFYPGRLLRQLLDLQDTGADEL					
5	g121	METQLYIGIMSGTSMDCADAVLVRMDGGKWLGAEGHAFTFYPDLRRKLLDLQDTGTDEL					
		10	20	30	40	50	60
	m121.pep	HRSRILSQELSRLYAQTAAELLCSQNLAFSDITALGCHGQTVRHAFEPHGYSIQLADLPFL					
10	g121	HRSRMLSQELSRLYAQTAAELLCSQNLAPCDITALGCHGQTVRHAFEPHGYSIQLADLPFL					
		70	80	90	100	110	120
	m121.pep	AXXX					
	g121	AELTRIFTVGDFRSRDLAAGGCGAPLVPAFHEALFRDDRETRVVLNIGGIANISVLPPGA					
15		130	140	150	160	170	180
	m121.pep	XXXXXXXXXXXXXXXXXXXXXQLPYDKNGAKSAQGNILPQLLDRLLAHPFYFAQRHPKST					
	g121	FAFGFDTGPGNMLMDAWTQAHWQLPYDKNGAKAAQGNILPQLLGRLLAHPFYFSQPHFKST					
20		190	200	210	220	230	240
	m121.pep	GKELFAINWLETYLDGGENRYDVLRTLRFRTAQTVCDAVSHAAADARQMYICDGGIRNPV					
	g121	GKELFALNWLETYLDGGENRYDVLRTLRFRTAQTVDVSHAAADARQMYICGGIRNPV					
25		250	260	270	280	290	300
	m121.pep	LMADLAECFGTRVSLHSTADLNLDPOWVEAAAFWLAACWINRIPGSPHKATGASKFCIL					
	g121	LMADLAECFGTRVSLHSTAEINLDPOWVEAAAFWLAACWINRIPGSPHKATGASKFCIL					
30		310	320	330	340	350	360
	m121.pep	XAGYYYYX					
	g121	GAGYYYYX					

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1004>:

40	a121.seq	1	ATGGAACAC	AGCTTTACAT	CGGCATCATG	TCGGGAACCA	GCATGGACGG
		51	GGCGGATGCC	GTA CTGATAC	GGATGGACGG	CGGCAAATGG	CTGGGCGCGG
		101	AAGGGCACGC	CTTTACCCCC	TACCCCGGCA	GTTACGCCG	CAAATTGCTG
		151	GATTTGCAGG	ACACAGGCGC	GGACGAACTG	CACCGCAGCA	GGATGTTGTC
45		201	GCAAGAACTC	AGCCGCCTGT	ACGCGCAAC	CGCCGCCGAA	CTGCTGTGCA
		251	GTCAAAACCT	CGCGCCGTCC	GACATTACCG	CCCTCGGCTG	CCACGGGCAA
		301	ACCGTCAGAC	ACGCGCCGGA	ACACAGTTAC	AGCGTACAGC	TTGCCGATTT
		351	GCCGCTGCTG	GCGGAACGGA	CTCAGATTTT	TACCGTCGGC	GA CTTCGCA
		401	GCCGCGACCT	TGCGGCCGCG	GGACAAGGCG	CGCCGCTCGT	CCCCGCCTTT
50		451	CACGAAGCCC	TGTTCCGCGA	CGACAGGGAA	ACACGCGCGG	TACTGAACAT
		501	CGGCGGGATT	GCCAAACATCA	GCGTACTCCC	CCCCGACGCA	CCCCGCCTTCG
		551	GCTTCGACAC	AGGACCGGGC	AATATGCTGA	TGGACGCGTG	GATGCAGGCA
		601	CACTGGCAGC	TTCTTACGA	CAAAAACGGT	GCAAAGGCGG	CACAGGCAA
		651	CATATTGCCG	CAACTGCTCG	ACAGGCTGCT	CGCCACCCCG	TATTTCGCAC
55		701	AACCCACCC	TAAAAGCAGC	GGGCGCGAAC	TGTTGCCCT	AAATTGGCTC
		751	GAAACCTACC	TTGACGGCGG	CGAAAACCGA	TACGACGTAT	TGCGGACGCT
		801	TTCCCGATTC	ACCGCGCAA	CCGTTTTCGA	CGCCGTCTCA	CACGACGCGG
		851	CAGATGCCCG	TCAAATGTAC	ATTTCGGCGG	GCGGCATCCG	CAATCCTGTT
		901	TTAATGGCGG	ATTTCGCAGA	ATGTTTCGGC	ACACGCGTTT	CCCTGCACAG
		951	CACCGCCGAA	CTGAACCTCG	ATCCGCAATG	GGTAGAAGCC	GCCGCGTTCCG
60		1001	CATGGATGGC	GGCGTGTGG	GTCAACCGCA	TTCCCGGTAG	TCCGCACAAA
		1051	GCAACCGGCG	CATCAAAC	GTGTATTCTG	GGCGCGGGAT	ATTATTATTG
		1101	A				

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This corresponds to the amino acid sequence <SEQ ID 1005; ORF 121.a>:

```

a121.pep
1  METQLYIGIM SCTSMGADA VLIRMDGGKW LGAECHAFTP YFGRLRKRL
5  51  ELQDTGADEL HRSRMLSCIL SELYAQTAAE LLCSONLAPS DITALGCHGQ
101 TVRHAFESY SVQLADLPLL AERTCIFTVG DFRSRDLAAG GQGAFLVPAF
151 HEALFRDDRE TRAVLNIGGI ANISVLPPDA PAFGFDTPG NMLMDAWMCA
201 HWQLPYDENG AKAQGNILF QLLDRLLAHF YFAQPHKST GRFLFALNWL
251 ETYLDGGENR YDVLRTLSKF TAQTVFLAVS HAAADAROMY ICGGGIRNPV
10  301 LMADLAECFG TRVSLHSTAE LNLDPOWVEA AFAWMAACW VNRIPGSPHK
351 ATGASKPCIL GAGYYY*

```

m121/a121 ORFs 121 and 121.a 74.0% identity in 366 aa overlap

```

15      10      20      30      40      50      60
m121.pep METQLYIGIMSCTSMGADAVLIRMDGGKWLGAECHAFTPYFGRLRQLLDLOETGADEL
a121      10      20      30      40      50      60
METQLYIGIMSGISMDGADAVLIRMDGGKWLGAECHAFTPYFGRLRKRLLDLOETGADEL

20      70      80      90      100     110     120
m121.pep HRSRMLSCILSKLYACTAAELLCSQNLAPSDITALGCHGQTVRHAFEPHCYSIQADLDFLL
a121      70      80      90      100     110     120
HRSRMLSCILSKLYACTAAELLCSQNLAPSDITALGCHGQTVRHAFEPHSYSVQLADLPLL

25      130     140     150     160     170     180
m121.pep AXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
a121      130     140     150     160     170     180
AERTCIFTVGDFRSKELAAAGGQGAFLVPAFHEALFRDDRETRAVLNIGGIANISVLPPDA

30      190     200     210     220     230     240
m121.pep XXXXXXXXXXXXXXXXXXXXXXXXXXXXQLPYDKNGAKSAQGNILPQLLDRLLAHPYFAQRHKST
a121      190     200     210     220     230     240
PAFGFDTPGPNMLMDAWMCAHWQLPYDKNGAKAAQGNILPQLLDRLLAHPYFAQPHKST

35      250     260     270     280     290     300
m121.pep GRFLFALNWLFTYLDGGENRYDVLRTLSKFTAQTVCDAVSHAADAROMYICDGGIRNPV
a121      250     260     270     280     290     300
GRFLFALNWLFTYLDGGENRYDVLRTLSKFTAQTVFDAVSHAADAROMYICGGGIRNPV

40      310     320     330     340     350     360
m121.pep LMADLAECFGTRVSLHSTADLNLDPOWVEAAXFAWLAACWINRIPGSPHKATGASKPCIL
a121      310     320     330     340     350     360
LMADLAECFGTRVSLHSTAE LNLDPOWVEAALFAWMAACWVNRIPGSPHKATGASKPCIL

50      310     320     330     340     350     360
m121.pep XAGYYYX
a121      310     320     330     340     350     360
GAGYYYX

```

55 Further work revealed the DNA sequence identified in *N. meningitidis* <SEQ ID 1006>:

```

m121-1.seq
1  ATGGAAACAC AGCTTTACAT CGGCATCATG TCGGGAACCA GCATGGACGG
51  GGCGGATGCC CTACTGATAC GGATGGACGG CGGCAATGG CTGGCGCGG
101 AAGGGCACGC CTTTACCCCC TACCCCGGCA GGTACGCGG CCAATTGCTG
151 GATTTCAGG ACACAGGCGC AGACGAACTG CACCGCAGCA GGATTTTGTC
60 201 GCAAGAACTC AGCCGCCAT ATGCGCAAAC CGCCGCCGAA CTGCTGTGCA

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5
10
15

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251 GTCAAAACCT CGCACCGTCC GACATTACCG CCCTCGGCTG CCACGGGCAA
301 ACCGTCCGAC ACCGCGCCGA ACACGGTTAC AGCATACAGC TTGCCGATTT
351 GCGCGTGTG GCGGAACGGA CGCGGATTTT TACCGTCGGC GACTTCCGCA
401 CCGCGGACCT TCGGCGCCGG GGACAAGGCG CGCCACTCGT CCGCGCCTTT
451 CACGAAGCCC TGTTCCGCGA CAACAGGGAA ACACGCGCGG TACTGAACAT
501 CGGCGGGATT GCCAACATCA GCGTACTCCC CCGCGACGCA CCGGCCTTCG
551 GCTTCGACAC AGGCGCGGGC AATATGCTGA TGGACGCGTG GACGCAGGCA
601 CACTGGCAGC TTCCTTACGA CAAAACGGT GCAAAGGCGG CACAAGGCAA
651 CATATTGCGG CAACTGCTCG ACAGGCTGCT CGCCACCCG TATTTCCGAC
701 AACCCACCC TAAAGCAGC GGGCGCGAAC TGTTTGCCTT AAATTGGCTC
751 GAAACCTACC TTGACGCGGG CGAAAACCGA TACGACGTAT TCGGAGCGCT
801 TTCCCGTTT ACCGCGCAA CCGTTTCCGA CGCGCTCTCA CACGCAGCGG
851 CAGATGCCCG TCAAACTGAC ATTGCGGCG GCGGCATCCG CAATCCTGTT
901 TTAATGGCGG ATTTGGCAGA ATGTTTCCGC ACACGCGTTT CCTGCACAG
951 CACCGCCGAC CTGAACCTCG ATCCGCAATG GGTGGAAGCC GCCGNATTTG
1001 CGTGGTTGGC GCGGTGTTGG ATTAATCGCA TTCCCGGTAG TCCGCACAAA
1051 GCAACCGGCG CATCCAAACC GTCTATTCTG ANCGCGGAT ATTATTATTG
1101 A

```

20 This corresponds to the amino acid sequence <SEQ ID 1007; ORF 121-1>:

m121-1.pep

```

1 METQLYIGIM SGTSMGDADA VLIRMDGGKW LGAEGHAFTH YPGRLLRQIL
51 DLQDTGADEL HRSRILSQEL SRLYAQTAAE LLCQNLAPE DITALGCHGQ
101 TVRHAFENGY SIQLADLFL AERTRFTVG DFRSRDLAAG GQGAPLVPAF
151 HEALFRDNRE TRAVLNIGGI ANISVLPPDA PAFGFDTPG NMLMDAWTQA
201 HWQLFYDKNG AKAQGNILP QLDRLLAHP YFAQPHPKST GRELFALNWL
251 ETYLDGGENR YDVLRTLSRF TAQTVCDVS HAAADARQMY ICGGGIRNPV
301 LMADLAECFG TRVSLHSTAD LNLDPQWVEA AXFAWLAACW INRIPGSPHK
351 ATGASKPCIL XAGYYY*

```

30 m121-1/g121 ORFs 121-1 and 121-1.ng showed a 95.6% identity in 366 aa overlap

35

	10	20	30	40	50	60
m121-1.pep	METQLYIGIMSGTSMGDADAVLIRMDGGKWLGAEGHAFTHYPGRLLRQILDLQDTGADEL					
g121	METQLYIGIMSGTSMGDADAVLVRMDGGKWLGAEGHAFTHYPDRLLRKLDDLQDTGTDEL					

40

	70	80	90	100	110	120
m121-1.pep	HRSRILSQELSKLYAQTAAELLCSQNLAPESDITALGCHGQTVRHAFENGYSIQLADLFL					
g121	HRSRILSQELSKLYAQTAAELLCSQNLAPECDITALGCHGQTVRHAFENGYSIQLADLFL					

45

	130	140	150	160	170	180
m121-1.pep	AERTRFTVGDFRSRDLAAGGQGAPLVPAFHEALFRDNRETRAVLNIGGIANISVLPPDA					
g121	AELTRFTVGDFRSRDLAAGGQGAPLVPAFHEALFRDRETRVNLNIGGIANISVLPPGA					

50

	130	140	150	160	170	180
m121-1.pep	PAFGFDTPGPNMLMDAWTQAHWQLFYDKNGAKAAQGNILPQLDRLLAHPYFAQPHPKST					
g121	PAFGFDTPGPNMLMDAWTQAHWQLFYDKNGAKAAQGNILPQLLGRLLAHPYFSQPHPKST					

55

	190	200	210	220	230	240
m121-1.pep	PAFGFDTPGPNMLMDAWTQAHWQLFYDKNGAKAAQGNILPQLDRLLAHPYFAQPHPKST					
g121	PAFGFDTPGPNMLMDAWTQAHWQLFYDKNGAKAAQGNILPQLLGRLLAHPYFSQPHPKST					

60

	250	260	270	280	290	300
m121-1.pep	GRELFALNWLETYLDGGENRYDVLRTLSKFTAQTVCDVSHAAADARQMYICGGGIRNPV					
g121	GRELFALNWLETYLDGGENRYDVLRTLSKFTAQTVWDVSHAAADARQMYICGGGIRNPV					

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          310      320      330      340      350      360
m121-1.pep LMADLAECFCFTRVSLHSTADLNLEDFQWVLAAXFAWLAACWINRIPGSPHKATGASKPCIL
          |||||
5 g121 LMADLAECFCFTRVSLHSTADLNLEDFQWVLAAXFAWLAACWINRIPGSPHKATGASKPCIL
          310      320      330      340      350      360

m121-1.pep XAGYYYYX
10          |||||
g121 GAGYYYYX

```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1008>:

```

a121-1.seq
15 1 ATGGGAACAC AGCTTTACAT CGGCATCATG TCGGGAACCA GCATGGACGG
51 GCGCGATGCC GTACTGATAC GGATGGACGG CGGCAATGG CTGGGCGCGG
101 AAGGGCAGCG CTTTACCCCC TACCCCGGCA GGTACGCGG CHAATTGCTG
151 GATTTCGAGG ACACAGGCGC GGACGAACTG CACCGCAGCA GGATGTTGTC
201 GCAAGAACTC AGCCGCCCTGT ACCGCGAAAC CGCCGCCGAA CTGCTGTGCA
251 GTCAAAACCT CGCGCGCTCC GACATTACCG CCCTCGGCTG CCACGGGCAA
301 ACCGTCAGAC ACCGCGCCGA ACACAGTTAC AGCGTACAGC TTGCCGATTT
351 GCGCGTGTG GCGGAACGGA CTCAGATTTT TACCGTCGCG GACTTCCGCA
401 GCGCGACCT TCGCGCGCGC GGACAGGCG CGCGCTCGT CCGCGCTTT
451 CACGLAGCCC TGTTCGCGA GACAGGGA ACACGCGCG TACTGAACAT
25 501 CGCGCGGATT CCAACATCA GCTACTCC CCGCAGCA CCGCGCTTCG
551 GCTTCGACAC AGGACCGGGC AATATGCTGA TGGACGCGT GATGCAGGCA
601 CACTGCGAGC TCCCTTACGA CAAAACGGT GCAAGGCGG CACAAGGCAA
651 CATATTGCGG CACTGCTCG ACAGGCTGCT CGCCACCCG TATTTCGCA
701 AACCCACCC TAAAGCAGC GCGCGGAA TGTTCGCCCT AATTGGCTC
30 751 GAACCTACC CTGACGCGG CGAAACCGA TACGACGTAT TGCGGACGCT
801 TTCCCGATTG ACCGCGCAA CCGTTTCGA CGCGCTCTCA CACGCGCGG
851 CAGATGCCCG TCAATGTAC ATTTGCGGCG CGGCATCCG CAATCCTGTT
901 TTAATGCGCG ATTTGGCAGA ATGTTTCGGC ACACGCGTT CCCTGCACAG
951 CACCGCGGAA CTGAACCTCG ATCCGCAATG GGTAGAAGCC GCGCGTTCG
35 1001 CATGGATGGC GCGGTGTTG GTCAACGCA TTCCCGGTAG TCCGCACAAA
1051 GCAACCGGCG CATCAAACC GTGTATTCTG GCGCGGGAT ATTATTATTG
1101 A

```

This corresponds to the amino acid sequence <SEQ ID 1009; ORF 121-1.a>:

```

40 a121-1.pep
1 METQLYIGIM SGTSMGADA VLIRMDGGKW LGAEGHAFTP YPGRLLRRKLL
51 DLQDTGADEL HSRMLSQEL SRLYAQTAEL LLCQNLAAPS DITALGCHGQ
101 TVRHAFESY SVQLADLPLL AERTQIFTVG DFRSRDLAAG GQGAPLVPAF
151 HEALFRDDRE TRAVLNIGGI ANISVLFFDA FAFGFDTPG NMLMDAWMOA
45 201 HWQLFYDKNG AKLAQGNILP QLLDRLLAHP YFAQPHPKST GRELFALNWL
251 ETYLDGGENR YDVLRTLSEF TAQTVFDAVS HLAADAROMY ICGGCIKRPV
301 LMADLAECFG TRVSLHSTAE LNLEDFQWVLA AAFAWMAACW VNRIPGSPHK
351 ATGASKPCIL GAGYYY*

```

50 m121-1/a121-1 ORFs 121-1 and 121-1.a showed a 96.4% identity in 366 aa overlap

```

          10      20      30      40      50      60
m121-1.pep METQLYIGIMSGTSMGADAVLIRMDGGKWLGAEGHAFTFYPGRLLRRQLLDLQDTGADEL
          |||||
55 a121-1 METQLYIGIMSGTSMGADAVLIRMDGGKWLGAEGHAFTFYPGRLLRRQLLDLQDTGADEL
          10      20      30      40      50      60

          70      80      90      100      110      120
m121-1.pep HSRMLSQELSRLYAQTAELLCQNLAAPSDITALGCHGQTVRHAFEPHGYISQLADLPLL
          |||||
60 a121-1 HSRMLSQELSRLYAQTAELLCQNLAAPSDITALGCHGQTVRHAFEPHYSYVQLADLPLL
          70      80      90      100      110      120

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5 m121-1.pep AERTK1FTVGDFFSRDLAAGGQGAFLVPFAPHEALFRDNRETRAVLNIGGGIANISVLPPDA
 a121-1 AERTQ1FTVGDFFSRDLAAGGQGAFLVPFAPHEALFRDDRETRAVLNIGGGIANISVLPPDA
 10 m121-1.pep PAFGFDTPGPNMLMDAWTQAHWQLPYDKNGAKAAQGNILPQLLDRLLAHPYFAQPHPKST
 a121-1 PAFGFDTPGPNMLMDAWMQAHWQLPYDKNGAKAAQGNILPQLLDRLLAHPYFAQPHPKST
 15 m121-1.pep GRELFALNWLETYLDGGENRYDVLRTLSRFTAQTVCDVASHAAADARQMYICGGGIRNPV
 a121-1 GRELFALNWLETYLDGGENRYDVLRTLSRFTAQTVFVDAVSHAAADARQMYICGGGIRNPV
 20 m121-1.pep LMAADLAECFGRVSLHSTADLNLDPCWVEAAAFWALACWINRIPGSPHKATGASKPCIL
 a121 LMAADLAECFGRVSLHSTADLNLDPCWVEAAAFWAMACWVNRIPGSPHKATGASKPCIL
 25 m121-1.pep XAGYYYYX
 a121 GAGYYYYX
 30

128 and 128-1

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1010>:

35 m128.seq (partial)
 1 ATGACTGACA ACGCACTGCT CCATTTGGGC GAAGAACCCC GTTTTGATCA
 51 AATCAAAACC GAAGACATCA AACCCGCCCT GCAAACCGCC ATCGCCGAAG
 101 CGCGCGAACA AATCGCCGCC ATCAAAGCCC AAACGCACAC CGGCTGGGCA
 151 AACACTGTCT AACCCCTGAC CGGCATCACC GAACGCGTCG GCAGGATTTG
 40 201 GGGCGTGCTG TCCACCTCA ACTGCGTCGC CGACACGCC GAACTGCGCG
 251 CCGTCTATAA CGAACTGATG CCCGAAATCA CCGTCTTCTT CACCGAAATC
 301 GGACAAGACA TCGAGCTGTA CAACCGCTTC AAAACCATCA AAAATTCCCC
 351 CGAATTGAC ACCCTCTCCC CCGCACAAA AACCAAATC AACAC
 45 1 TACGCCAGCG AAAAATGCG CGAAGCCAAA TACGCGTTCA GCGAAACCGA
 51 wGTCAAAAAA TAYTTCCCYG TCGGCAAwGT ATTAAACGGA CTGTTCGCC
 101 AAmTCAAAAA ACTmTACGGC ATCGGATTTA CCGAAAAAAC yGTCCCCGTC
 151 TGGCACAAG ACGTGCCTTA TTKTGAATTG CAACAAAACG GCGAAMCCAT
 201 AGCGCGCGTT TATATGGATT TGTACGCACG CGAAGGCAAA CGCGCGCGCG
 251 CGTGGATGAA CGACTACAAA GGCCGCCGCC GTTTTTCAGA CGGCACGCTG
 50 301 CAAYTGCCCA CCGCCTACCT CGTCTGCAAC TTCGCCCCAC CCGTCGGCGG
 351 CAGGGAAGCC CGCyTGAGCC ACGACGAAAT CCTCATCCTC TTCCACGAAA
 401 CCGGACACGG GCTGCACCAC CTGCTTACCC AAGTGGACGA ACTGGGCGTA
 451 TCCGGCATCA ACGGCGTAKA ATGGGACGCG GTCGAATGTC CCAGCCAGTT
 501 TATGGAATAA TTCTTTTGGG AATACAATGT CTTGGCACAA mTGTACAGCC
 55 551 ACGAAGAAAC CGGcgTTCCC yTGCCGAAAG AACTCTTsGA CAAAwTGCTC
 601 GCCGCCAAA ACTTCCAAeG CGGCATGTTC yTsGTCCGGC AAwTGAGTT
 651 CCCCCCTCTT GATATGATGA TTACAGCGA AGACGACGAA GGCCGTCTGA
 701 AAAACTGGCA ACAGGTTTTA GACAGCGTGC GCAAAAAAGT CGCCGTCATC
 751 CAGCCGCCCG AATACAACCG CTTGCGCTTG AGCTTCGGCC ACATCTTCG
 60 801 AGCGGGCTAT TCCGCAGCTn ATTACAGCTA CGCGTGGGCG GAAGTATTGA

- 92 -

851 GCGCGGACGC ATACGCCGCC TTGAAGAAA GCGACGATGT CGCCGCCACA
 901 GGCAACGCT TTTCGCAGCA ATCCTCGCC CTCGGGGAT CGCGCAGCGG
 951 nGCAGATCC TCALAGCCT TCCCGGCCG CGAACCGAGC ATAGACGCAC
 1001 TCTTGGCCA CAGCGTTTC GACAACCGG TCTGA

5 This corresponds to the amino acid sequence <SEQ ID 1011; ORF 128>:

m128.pep (partial)

1 MTDNALLELG EEPFDDQIKT EDIKFALQTA IAEAREQIAA IKAQTHTGWA
 51 NTVEPLTGT BRVCKIWGTV SHLNCVADTP ELRAVYNELM PEITVFPTET
 101 GQPIELYNRF KTIKNSPEPD TLSFAQTKL NH

10 //

1 YASEKLREAK YAFSETXVRK YFPVGVNLG LPAQXKKLYG IGFTTEKTVPV
 51 WKPTVRYXEL QONGEXIGCV YMDLYAREGK RGGAWMNDYK GRRRFSDDTL
 101 GLPTAYLNCN PAFVVGREA RLSDLEILL FHEFGHGLHH LLTQVDELGV
 151 SGINGVYWLK VELHSQPMEN FVWEYNVLAQ XSAHEETGVP LFKELXDKXL
 151 AAKNFQXGMF XVRCEFFALP DMMIYSELDE GRLKNWQVQL DSVRKKVAVI
 251 CFFLYNRPAL SPGHIFAGGY SAANYSYAWA EVLSALAYAA FEESDEVAAT
 301 GGRFWQELLA VGXSRSGAES FKAFRGREPS IDALLRHSFG DNAV*

The following partial DNA sequence was identified in *N. gonorrhoeae* <SEQ ID 1012>:

20 g128.seq

1 atgattgaca accCactgct ccacttgggc gaagaacccc GTTTTaataca
 51 aatccaaacc gaagACatca AACCCGCCGT CCAAACCGCC ATCGCCGAAG
 101 CCGCGGACA AATCGCCGCC CTCALAGCGC AAACGCACAC CGGCTGGGCG
 151 AACACCGTCG AGCGTCTGAC CGGCATCACC GAACCGCTCG GCAGGATTTG
 201 GGGCGTCTGT TCCCATCTCA ACTCCCTCGT CGACACGCCC GAACTGCGCG
 251 CCGTCTATAA CGAACTGATG CCGTGAATCA CGCTCTTCTT CACCGAATC
 301 GGACAAAGACA TCGAACTGTA CAACCGCTTC AAAACCATCA AAAATTCCCC
 351 CGAATTGCA ACGCTTTCCC CCGCACAAA AACCAAGCTC GATCAGGACC
 401 TCGCGGATTT CGAATTGAGC GCGCGGAAC TCGCGCCGA ACGGCAGGCA
 451 GAACTGGCAA AACTGCAAC CGAAGGCGCG CAACTTTCCG CCAAATTCTC
 501 CCAAAACGTC CTAGACGCGA CCGACGCGT CCGCATTTAC TTGACGATG
 551 CCGCACCGCT TCGCGGCAAT CCGAAGACG CGCTCGCAT GTTGCCGCG
 601 GCGCGGCAA GCGAAGGCAA AACAGGTTAC AAAATCGGCT TGCAGATTCC
 651 GCACTACCTT GCGGTTATCC AATACGCCG CAACCGCGAA CTGCGCGAAC
 701 AAATCTACCG CGCTACGTT ACCCGTGCCA GCGAATTTC AAACGACGGC
 751 AAATTCGACA ACACCGCCAA CATCGACCGC ACGCTCGAAA ACGCATTGAA
 801 AACCGccaa ctGCTCGGCT TTAATAATTA CGCCGAATTG TCGCTGGCAA
 851 CCAAAATGGC GGACACGCC GAAACAGGTT TAACTTCTT GCACGACCTC
 901 GCGCGCGCG CCAACCCCTA CGCCGAAAAA GACCTCGCCG AAGTCAAAGC
 951 CTTCGCGCG GAACACCTCG GTCTCGCCGA CCGCGAGCG TGGGACTTGA
 1001 GCTACGCCGG CCAAAAATG CGCGAAGCCA AATACGCATT CAGCGAAACC
 1051 GAAGTCAAAA AATACTTCCC CGTCGGCAA GTTCTGGCAG GCCTGTTCGC
 1101 CCAATCATA AACTCTACG GCATCGGATT CGCCGAAAA ACCGTTCCCG
 1151 TCTGGCATA AGACGTGCGC TATTTTGAAT TGCAACAAA CGGCAAAACC
 1201 ATCGGCGGCG TTTATATGGA TTTGTACGCA CGCGAAGGCA AACGCGGCGG
 1251 CGCGTGGATG AACGACTaca AAGGCGCGCG CCGCTTTGCC GACGgcacGC
 1301 TGCAACTGCC CACCGCTTAC CTCGTCTGCA ACTTCGCCCC GCCCGTCGGC
 1351 GGCAAGGAAG CCGGTTTAA GACGACGAA ATCCTCACCC TCTTCCACGA
 1401 AacCGGCCAC GGAATGCAAC ACCTGCTTAC CCAAGTGGAC GAACTGGGCG
 1451 TCTCCGCAT CAacggcgtA GAATGGGACG CGGTGGAAT GCCCAGCCAG
 1501 TTTATGAAA ACTTCGTTTG GGAATACAA GTATTGGCAC AAATGTCCGC
 1551 CCACGAAGAA AccgCGGAGC CCTGCGGAA AGAACTCTTC GACAAATGC
 1601 TgcCGCCAA AAATTTCCAG CGCGGTATGT TCCTCGTCCG GCAAATGGAG
 1651 TTGCGCCTCT TCGATATGAT GATTTACAGT GAAAGCGACG AATGCCGTCT
 1701 GAAAACTGG CAGCAGGTTT TAGACGCGT GCGCAAGAA GTcGCCGTCA
 1751 TCCAACCGCC CGAATACAA CGCTTCGCCA ACAGCTTCGG CCacatctTC
 1801 GCcggCGGCT ATTCCGAGG CTATTACAGC TACGCATGGG CCGAAGTCTC
 1851 CAGCACCGAT GCCTACCGCG CCTTTGAAGA AAGcGACGac gtcGCCGCCA

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1901 CAGGCAAACG CTCTGGCAA GAAAtccctt ccctcggcgg ctCCCGCAGC
 1951 gcgGCGGAAT CCTTCAAAGC CTCCGCGGA CGCGAACCGA GCATAGACGC
 2001 ACTGCTGCGC CAaagcggT TCGACAACGC gGcttga

5 This corresponds to the amino acid sequence <SEQ ID 1013; ORF 128.ng>:

g128.pep
 1 MIDNALLHLG EEPFRNQIQT EDIKPAVOTA IAEARGQIAA VKAQTHTGWA
 51 NTVERLTGIT ERVGRWGVV SHLSVVDTP ELRAVYNELM PEITVFFTEI
 101 GQDIELYNRF KTIKNSPEFA TLSFAQKTKL DHDLRDFVLS GAELPPERQA
 151 ELAKLQTEGA QLSAKFSONV LDATDAFGIY FDDAAPLAGI PEDALAMFAA
 201 AAGSEGTGY KIGLQIPHYL AVIQYAGNRE LREQIYRAYV TRASELSNDG
 251 KFDNTANIDR TLENALKTAK LLGFKNYAEI SLATKMADTP EQVLNLFHDL
 301 ARRAKPYAEK DLAEVKAFAR EHLGLADPOF WDLSYAGEKL REAKYAFSET
 351 EVKRYFFVVGK VLAGLFAQIK KLYGIGFAEK TVPVVHKDVR YFELQONGKT
 15 401 ICGVYMDLYA REGKRGGAWM NDYKRRRFA DCTLQLPTAY LVCNFAPFVG
 451 GKEARLSHDE ILTLFHETGH GLHLLTQVD ELGVSGINGV EWDDELPSQ
 501 FMENFVWEYN VLAQMSAHEE TGEPLPKELF DKMLAAKNFQ RGMFLVRQME
 551 FALFDMMIYS ESDECRKXW QQVLSVRKE VAVIQPPEYN RFANSFGHIF
 601 AGGYSAGYYS YAWAEVLSTD AYAAFEESDD VAATGKRFWQ EILAVGGSRS
 20 651 AAESFKAFRG REPSIDALLR QSGFDNAA*

ORF 128 shows 91.7% identity over a 475 aa overlap with a predicted ORF (ORF 128.ng)
 from *N. gonorrhoeae*:

25 m128/g128

	10	20	30	40	50	60
g128.pep	MIDNALLHLGEEPRFNQIQTEDIKPAVOTAIAEARGQIAAVKQTHTGWANTVERLTGIT					
m128	MTDNALLHLGEEPRFDQIKTEDIKPAKQTAIAEAREQIAAIAKQTHTGWANTVEPLTGIT					
	10	20	30	40	50	60
g128.pep	ERVGRWGVVSHLSVVDTPFELRAVYNELMPEITVFFTEIGQDIELYNRFKTIKNSPEFA					
m128	ERVGRWGVVSHLNCVADTFELRAVYNELMPEITVFFTEIGQDIELYNRFKTIKNSPEFD					
	70	80	90	100	110	120
g128.pep	ERVGRWGVVSHLSVVDTPFELRAVYNELMPEITVFFTEIGQDIELYNRFKTIKNSPEFA					
m128	ERVGRWGVVSHLNCVADTFELRAVYNELMPEITVFFTEIGQDIELYNRFKTIKNSPEFD					
	70	80	90	100	110	120
g128.pep	TLSFAQKTKLDHDLRDFVLSGAELPPERQAEELAKLQTEGAQLSAKFSQNVLDATDAFGIY					
m128	TLSFAQKTKLNH					
	130					
	//					
		340	350	360		
g128.pep		YAGEKLREAKYAFSETEVKKYFPVGKVLG				
m128		YASEKLREAKYAFSETXVKKYFPVGXVLNG				
		10	20	30		
	370	380	390	400	410	420
g128.pep	LFAQIKKLYGIGFAEKTVPVWVKDVRXYFELQONGKTIGGVYMDLYAREGKRGGAWMNDYK					
m128	LFAQXKKLYGIGFTEKTVPVWVKDVRXYELQONGEXIGGVYMDLYAREGKRGGAWMNDYK					
	40	50	60	70	80	90
g128.pep	GRRRFADGTLQLFTAYLVCNFAPFVGKKEARLSHDEILTLFHETGHGLHLLTQVDELGV					

30	a128.seq	1	ATGACTGACA	ACGCACTGCT	CCATTTGGGC	GAAGAACCCC	GTTTTGATCA
		51	ATTCAAAACC	GAGACATCA	AACCCGCCCT	GCAAACCGCC	ATTGCCGAAG
		101	CGCGCGAACA	AATCGCCGCC	ATCAAAGCCC	AAACGCACAC	CGGCTGGGCA
		151	AACACTGTCT	AACCCCTGAC	CGGCATCACC	GAACGGGTGC	GCAGGATTTG
35		201	GGCGCTGGTG	TGCGACCTCA	ACTCCGTCA	CGACACGCC	GAACTGCGCG
		251	CCGCCCTACAA	TGAATTAATG	CCCGAATTA	CGCTCTTCTT	CACCGAATTC
		301	GGACAAAGCA	TGAGCTGTA	CAACCGCTTC	AAAACCATCA	AAAACCTCCC
		351	CGAGTTCGAC	ACCCCTCTCC	ACCGCGAAAA	AACCAAACTC	AACCAACGATC
		401	TGCGCGATTT	CGTCTCTCAG	GGCGCGGAAC	TGCCGCCCTGA	ACAGCAGGCA
40		451	GAAATTGGCAA	AATTCGAAAC	CGAAGGCGCG	CAACTTTCCG	CAAAATTTCTC
		501	CCAAAACGTC	CTAGACCGCA	CCGACGCGTT	CGGCATTTAC	TTTGACGATG
		551	CCGCACCGCT	TCCCGGCATT	CCCGAAGACG	CGCTCGCCAT	GTTCGCCGCT
		601	GCCGCGCAAA	GGCAAGGCGA	AACAGGCTAC	AAAATCGGTT	TGCAGATTCC
		651	GCACCTACCTC	CGCCTCATCC	AATACGCCGA	CAACCGCAAA	CTCGCGGAAC
45		701	AAATCTACCG	CGCCTCATTT	ACCCGCGCCA	CGCAGCTTTC	AGACGACGGC
		751	AAATTTCGACA	ACACCGCCAA	CATCGAACCG	ACGCTCGAAA	ACGCCCTGCA
		801	AACCGCCAAA	CTGCTCGGCT	TCAAAAACATA	CGCCGAATTG	TCCCTGGCAA
		851	CCAAAATGCG	GGACACCCCT	GACAAAGTTT	TAACTTCCCT	GCACGACCTC
		901	GCCGCGCCGC	CCAAAACCTA	CGCGGA AAAA	GACCTCGCCG	AAGTCAAAGC
50		951	CTTCGCCCGC	GAAAGCCTCG	GCCTCGCCGA	TTTGCAACCG	TGGGACTTGG
		1001	GCTACGCCCG	CGAAAACATG	CGCGAAGCCA	AATACGCATT	CAGCGAAACC
		1051	GAACTCAAAA	AATACTTCCC	CGTCGGCAAA	GTATTAAACG	GACTCTTCGC
		1101	CAAAATCAAA	AATCTCTAC	GCATCGGATT	TACCGAAAAA	ACCGTCCCCG
		1151	TCTGGCACAA	AGACGTGCGC	TATTTTGAAT	TGCACAAAAA	CGCGGAAACC
55		1201	ATAGCGCGCG	TTTATATGGA	TTTGTACGCA	CGCGAAGGCA	AACCGCGGCG
		1251	CGCGTGGATC	AACGACTACA	AAGCGCGCGC	CGCTTTTTC	GACGGCAGCG
		1301	TGCAAACTGCC	CAACGCTTAC	CTCGCTGCA	ACTTCACCCC	GCCCGTCGGC
		1351	GGCAAGAGAG	CCCGCTTGAG	CCATGACGAA	ATCCTCACCC	TCTTCCACCA
		1401	AACCGGACAC	GGCCTGCACC	ACCTGCTTAC	CCAAGTCGAC	GAACTGGGCG
		1451	TATCCGGCAT	CAACGGCGTA	GAAAGGGACG	CAGTGCAACT	GCCCACTCAG
60		1501	TTTATGGAAA	ATTTCTTTTG	GGAATACAAT	GTCTTGGCGC	AAATGTCCGC

a128.pep

m128/a128 ORFs 128 and 128.a showed a 66.0% identity in 677 aa overlap

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30      m128.pep    MTDNALLHLGEEPRFDQIKTEDIKFPALQTATAEARECIAAIIKAQTHTGWANTVEPLTGIT
               10       20       30       40       50       60
               |||||
a128      MTDNALLHLGEEPRFDQIKTEDIKFPALQTATAEARECIAAIIKAQTHTGWANTVEPLTGIT
               10       20       30       40       50       60

35      m128.pep    ERVGRIGVGVS HLNCAVDTFELRAVYNELMPEITVFVFTTEIGQDIELYNRFKTIKNSPEFDF
               70       80       90       100      110      120
               |||||
a128      ERVGRIGVGVS HLNCAVDTFELRAVYNELMPEITVFVFTTEIGQDIELYNRFKTIKNSPEFDF
               70       80       90       100      110      120

40      m128.pep    TLSPAQKTKL NH-----
               130
a128      TLSPAQKTKL NHDLRDFVLSGAELPPEQQAE LAKLQTEGAQLSAKFSONVLDATDAFGIY
               130      140      150      160      170      180

50      m128.pep    -----
a128      FDDAAFLAGIPEDALAMFAAAAQSEGKTGYKIGLCIPHYLAVIQYADNRKLREQIYRAYV
               190      200      210      220      230      240

55      m128.pep    -----
a128      TRASELSDDGKFDNTANIDETLENALQTAKLLGFKNYAELS LATKMADTPEQVLNFLHDL
               250      260      270      280      290      300

60      m128.pep    -----YASEKLREAKYAFSETXVKKYFPVGX
               140      150
               |||||

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	a118	AAAKFYAEKDLAEVIAFAAEELGLDLPQWDLGYAGEKLRKAYAFSETEVKKYFFVGK	310	320	330	340	350	360
5	m128.pep	VLNGLFAQIRKLYCIGFTTKTVFWWEKIVHYXELQONGEXIGGVYMDLYAREGKRGGAWM	160	170	180	190	200	210
	a118	VLNGLFAQIRKLYCIGFTTKTVFWWEKIVHYXELQONGEXIGGVYMDLYAREGKRGGAWM	370	380	390	400	410	420
10	m128.pep	NDYKGRRRFSDGTLQLPTAYLVONFTFVGGKEARLSEDEILILFHETGHGLHLLTQVD	220	230	240	250	260	270
	a118	NDYKGRRRFSDGTLQLPTAYLVONFTFVGGKEARLSEDEILILFHETGHGLHLLTQVD	430	440	450	460	470	480
15	m128.pep	ELGVSGJNGVWDAVLPSCFMENFWWYNVLAQXSAHEETGVFLPKELXDKMLAAKNFQ	280	290	300	310	320	330
	a118	ELGVSGJNGVWDAVLPSCFMENFWWYNVLAQXSAHEETGVFLPKELXDKMLAAKNFQ	490	500	510	520	530	540
20	m128.pep	XGMFNVROXELFALFDMMIYSEHTEGLKNWQOVLDVKKKVAVIQPFYNNRFAISFGHIF	340	350	360	370	380	390
25	a118	XGMFNVROXELFALFDMMIYSEHTEGLKNWQOVLDVKKKVAVIQPFYNNRFAISFGHIF	550	560	570	580	590	600
30	m128.pep	AGGYSAGYYSYAWAEVLSADANAAPFESDVAATGKRFWQELAVGXSRSAGAESFKAFRG	400	410	420	430	440	450
	a118	AGGYSAGYYSYAWAEVLSADANAAPFESDVAATGKRFWQELAVGXSRSAGAESFKAFRG	610	620	630	640	650	660
35	m128.pep	REFSIDALLRHSGFDNAVX	460	470				
	a118	REFSIDALLRHSGFDNAAX			670			
40								

Further work revealed the DNA sequence identified in *N. meningitidis* <SEQ ID 1016>:

	m128-1.seq	
45	1	ATGACTGACA ACGCACTGCT CCATTTGGGC GAAGAACCCC GTTTTGATCA
	11	AATCAAAACC GAAGACATCA AACCCGCCCT GCAAACCGCC ATCGCCGAAG
	101	CGCGCGAACA AATCGCGGCC ATCAAGCCCC AAACGCACAC CGGCTGGGCA
	151	AACACTGTCTG AACCCCTGAC CGGCATCACC GAACGCGTCG GCAGGATTTG
	201	GGGCGTGCTG TCGCACCTCA ACTCCGTCGC CGACACGCC GAAGTGCCTG
	251	CCGTCTATAA CGAAGTATG CCGGAAATCA CCGTCTTCTT CACCGAAATC
50	301	GGACAAGACA TCGAGCTGTA CAACCGCTTC AAAACCATCA AAAATTCCCC
	351	CGAATTGAC ACCTCTCTCC CGGCACAAA AACCAAACTC AACACGATC
	401	TGCGCGATTT CGTCTCTAGC GGCGCGCAAC TGCCGCCCCG ACAGCAGGCA
	451	GAACTGGCAA AACTGCAAC CGAAGCGCG CAACTTTCCG CCAAATTCTC
	501	CCAAACGCTC CTAGACGCGA CCGACGCTT CGGCATTAC TTTGACGATG
55	551	CCGACCGCT TCGCGGCAAT CCGAAGACG CGCTCGCCAT GTTTGCCGCC
	601	GCCGCGCAA GCGAAGCAA AACAGGCTAC AAAATCGGCT TGCAGATTCC
	651	AACTACCTC GCCGTCTCC AATACGCCG CAACCGCGAA CTGCGCGAAC
	701	AAATCTACCG CGCTACGTT ACCCGCGCCA GCGAACTTC AGACGACGGC
	751	AAATTCGACA ACACCGCAA CATCGACCG ACGCTCGCAA ACGCCCTGCA
60	801	AACCGCCAAA CTGCTCGCT TCAAAACTA CGCCGAATTG TCGCTGGCAA
	851	CCAAATGGC GGACACGCC GACAAAGTTT TAAACTTCCT GCACGACCTC

- 97 -

5
10
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901 GCGCCGCGCG CCAAAACCTA CCGCGAAAAA GACCTCGCCG AAGTCAAAGC
911 GTTCGCGCCG GAAAGCCTGA ACCTCGCCGA TTTGCAACCG TGGGACTTGG
1001 GGTACGCCAG CGAAAAACTG CGCGAAGCCA AATACCGCTT CAGCGALACC
1051 GAGTCAAAA AATACTTCCC CGTCGGUAAA GTATTAAACG GACTGTTCGC
1101 CCAATCAAA AACTCTACG GCATCGGATT TACCGAAAAA ACCCTCCCCG
1151 TCTGGCACAA AGACGTGCGC TATTTTGAAT TGCAACAAA CGCGAAACC
1201 ATAGCGCGCG TTTATATGGA TTTCTACGCA CGCGAAGCCA AACCGCGCGG
1251 CGCGTGGATG AACGACTACA AAGCGCGCGC CGCTTTTCA GACGGCACGC
1301 TGCACTGCC CACCGCCTAC CTCGTCTGCA ACTTCGCCCC ACCCGTCGGC
1351 GGCAGGGAAG CCGCGCTGAG CCACGACGAA ATCCTCATCC TCTTCCACGA
1401 AACCGGACAC GCGCTGCACC ACCTGCTTAC CCACTGGAC GAACTGGGCG
1451 TATCGGCAAT CAACGGCGTA GAATGGGACG CGGTGAACT GCCCAGCCAG
1501 TTTATGGAAA ATTCGTTTG GGAATACAA GTCTTGGCAC AAATGTCAGC
1551 CCACGAGAA ACCGCGCTTC CCGTCCGAA AGAACTCTTC GACAAATATG
1601 TCGCGGCCAA AACTTCCAA CGCGGCATGT TCCTCGTCCG GCAATGGAG
1651 TTGCGCCTCT TTGATATGAT GATTACAGC GAAGACGACG AAGGCGCTCT
1701 GAAAACTGG CAACAGGTTT TAGACAGCGT GCGCAAAAA ETCCCGCTCA
1751 TCCAGCGCGC GGAATACAA CGCTTCGCT TGAGCTTCGG CCACATCTTC
1801 GCAGCGGCT ATTCGCGACG CTATTACAGC TACGCGTGGG CGGAAGTATT
1851 GAGCGCGGAC GCATACGCGC CTTTGALGA AAGCGACGAT CTCGCGGCCA
1901 CAGCGAAGC CTTTGGCAG GAAATCCTCG CCGTCGCGCG ATCGCGCAGC
1951 GCGGAGAAAT CTTTCAAGC CTTCGCGCGC CGCGAACCGA GCATAGACGC
2001 ACTCTGCGC CACAGCGGTT TCGACAACGC GGTCTGA

```

This corresponds to the amino acid sequence <SEQ ID 1017; ORF 128-1>:

m128-1.pep.

```

1 MTDNALHLG EEPFRDQTKT EDIKPALOTA IAEAREQIAA IKAQHTGWA
51 NTVEPLTGT ERVGRJWGVV SHLNSVADTF ELKAVYNELM PEITVFFTEI
101 GGLDFLYNRF KTIKNSPEFD TLSFAQTKL NHDLRDFVLS GAELPPEQQA
151 ELAKLQTEGA QLSAKFSQNV LKATDAFGIV FDDAFLAGI PEDALAMFAA
201 AAGLSKTCY KIGLQIFHYL AVIQYADNRE LREQYRAYV TRASELSDDG
251 EFDNTANIDR TLNALQTAH LLGFKNYAEL SLATKMADTP EQVLNPLHDL
301 ARKAKFYAEK DLAEVFAFAR ESLNLADLQF WDLGYASEKL REAKYAFSET
351 EVKKYFFVGH VLNGLFAQIK KLYGIGFTEK TVFVWHKDVY YFELQONGET
401 LGGVMDLYA REGHRGGAWM NDYKGRARFS DGTLLQLPTAY LVCNFAFPVG
451 GREARLSHDE ILILFHETGH GLHHLTQVD ELGVSGINGV EWDAVELFSQ
501 FMENFWWYN VLAQMSAHEE TGVFLPKELF DKMLAANKNFQ RGMFLVRQME
551 FALFDMMTYS EDDEGRLLNW QQVLDSEVRKK VAVIQPFPEYN RFALSFHGHI
601 AGGYAGYYS YAWAEVLSAD AYAAFEESDI VAATGKRWFQ EILAVGGSRS
651 AAESFRAFRG REPSIDALLR HSGFDNAV

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The following partial DNA sequence was identified in *N. gonorrhoeae* <SEQ ID 1018>:

g128-1.seq (partial)

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1 ATGATTGACA ACGCACTGCT CCACTTGGGC GAAGAACCCC GTTTTAATCA
45 51 AATCAAAACC GAAGACATCA AACC CGCCGT CCAAACCGCC ATCGCCGAAG
101 CGCGCGGACA AATCGCGGCC GTCAAAGCGC AAACGCACAC CGGCTGGGCG
151 AACACCGTCG AGCGTCTGAC CGGCATCACC GAACGCGTCG GCAGGATTTG
201 GGGCGTCGTG TCCCATCTCA ACTCGCTCGT CGACACGCCC GAACTGCGCG
251 CGGTCTATAA CGAACTGATG CCTGAAATCA CGCTCTTCTT CACCGAAATC
50 301 GGACAAAGACA TCGAACTGTA CAACCGCTTC AAAACCATCA AAAATTCCCC
351 CGAATTGCA ACGCTTCCCC CCGACAAAA AACCAAGCTC GATCAGGACC
401 TGCGCGATTT CGTATTGAGC GCGCGGGAAC TGCCGCCCCG ACGGCAGGCA
451 GAACTGGCAA AACTGCAAAC CGAAGCGCGC CAACTTTCCG CCAAAATCTC
50 501 CCAAAACGTC CTAGACGCGA CCGACGCGTT CGGCATTTAC TTTGACGATG
55 551 CCGCACCGCT TGCCGGCATT CCGGAAGACG CGCTCGCCAT GTTTGCCGCC
601 GCGCGCAGAA GCGAAGGCAA AACAGGTTAC AAAATCGGCT TGCAGATTCC
651 GCACTACCTT GCGGTATACC AATACGCGCG CAACCGCGAA CTGCGCGAAC
701 AAATCTACCG GCGCTACGTT ACCCGTGCCA GCGAAGTTTC AAACGACGGC
751 AAATTCGACA ACACCGCCAA CATCGACCGC ACGCTCGAAA ACGCATTGAA
801 AACCGCCAAA CTGCTCGGCT TTAATAATTA CGCCGAATTG TCGCTGGCAA
851 CCAAAATGGC GGACACGCCC GAACAGGTTT TAAACTTCCT GCACGACCTC
901 GCGCGCGCGC CCAAAACCTA CCGCGAAAAA GACCTCGCCG AAGTCAAAGC

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941 CTTGGCCCGC GAACACCTCG GTCTCGCCGA CCGCGAGCCG TGGGACTTGA
 1001 GCTACGCCCG CGAAAACTG CCGGAGCCGA AATACGCATT CAGCGAAACC
 1051 GAAGTCAAA AATACCTCC CCGCGGCAA GTTCTGGCAG GCCTCTTCGC
 1101 CCAATCAAA AACTCTACG GCATCGGATT CGCCGAAAA ACCGTTCCCG
 1151 TCTGGCACA AGACCTGCGG TATTTTGATT TGCAACAAA CGGCAAAACC
 1201 ATCGCGCGCG TTTATATGA TTCTACCCA CGCGAAGGCA AACGCGGCGG
 1251 CGCGTGGATG AACGACTACA AAGGCGCGCG CCGCTTTGCC GACGGCAGCG
 1301 TGCACCTGCC CACCGCCTAC CTCCTCTGCA ACTTCGCCCC GCCCGTCGGC
 1351 GGCAAGAGAG CCGCTTTAGC CCACGACGAA ATCCTCACCC TCTTCCACGA
 1401 AACCGGCCAC GGACTGCACC ACCTGCTTAC CCAAGTGGAC GAACCTGGCG
 1451 TGTCCGGCAT CAACCGCCTA AAA

This corresponds to the amino acid sequence <SEQ ID 1019; ORF 128-1.ng>:

g128-1.pep (partial)
 1 MIDNALLHLG ELPRNQDPT ILLKFAVQTA IAEARGQIAA VKAQTHTGWA
 11 NTVERLTGTT ERVGRWGVV SHLSNVVDTF ELRAVYNELM PEITVFFTEI
 101 GQDIELYNKF RTIKNFIFA TLSPAQKTKL DHELDFVLS GAELFFPFA
 111 ELAKLQTEGA QLSAKFSQNV LADDAFGIY FDDAAPLAGI PEDALAMTFA
 201 AAQSEGKTYG KIGLCIHYL AVIQYAGNRE LREQIYRAYV TRASELSNDG
 211 KFLNTANIDR TLENALKAK LLGFKNYAEL SLATKMADTF EQVNLFLHDL
 301 AARAKFYAEK DLAEVKAFAR EHLGLADFPQ WDLSYAGEKL REAKYAFSET
 351 EVKKYFPVGG VLAGLEAQIK KINGIGFAEK TVPVWKKDKR YFELQONGKT
 401 TGGVYMELYA KEGKRGGAWE KTYKGRKFA DGTQLQFTAY LVCNFAFPVG
 451 GREARLSEDE IITLFHETGH GLHRLTQVD ELGVSGINGV K

m128-1/g128-1 ORFs 128-1 and 128-1.ng showed a 94.5% identity in 491 aa overlap

30		10	20	30	40	50	60
	g128-1.pep	MIDNALLHLGELPRNQDPTILLKFAVQTALAEARGQIAAVKAQTHTGWANTVERLTGIT					
	m128-1	MTDNALLHLGELPRNQDPTILLKFAVQTALAEARGQIAAVKAQTHTGWANTVERLTGIT					
35		70	80	90	100	110	120
	g128-1.pep	ERVGRWGVVSHLSNVVDTPELRAVYNELMPEITVFFTEIGQDIELYNKFRTIKNSPFFFA					
	m128-1	ERVGRWGVVSHLSNVVDTPELRAVYNELMPEITVFFTEIGQDIELYNKFRTIKNSPFFD					
40		70	80	90	100	110	120
	g128-1.pep	TLSPAQKTKLDHELDFVLSGAELFFPERQAELAKLQTEGAQLSAKFSQNVLDATDAFGIY					
	m128-1	TLSPAQKTKLDHELDFVLSGAELFFPERQAELAKLQTEGAQLSAKFSQNVLDATDAFGIY					
45		130	140	150	160	170	180
	g128-1.pep	FDDAAPLAGIPEDALAMFAAAQSEGKTYGKIGLCIHYLAVIQYAGNRELREQIYRAYV					
	m128-1	FDDAAPLAGIPEDALAMFAAAQSEGKTYGKIGLCIHYLAVIQYADNRELREQIYRAYV					
50		190	200	210	220	230	240
	g128-1.pep	TRASELSNDGKFDNTANIDRTLENALKAKLLGFKNYAELSLATKMADTFEQVNLFLHDL					
	m128-1	TRASELSNDGKFDNTANIDRTLENALKAKLLGFKNYAELSLATKMADTFEQVNLFLHDL					
55		250	260	270	280	290	300
	g128-1.pep	ARRAKFYAEKDLAEVKAFAREHLGLADFPQWDLSYAGEKLREAKYAFSETEVKKYFPVGG					
	m128-1	ARRAKFYAEKDLAEVKAFAREHLGLADFPQWDLSYAGEKLREAKYAFSETEVKKYFPVGG					
60		310	320	330	340	350	360
	g128-1.pep	ARRAKFYAEKDLAEVKAFAREHLGLADFPQWDLSYAGEKLREAKYAFSETEVKKYFPVGG					
	m128-1	ARRAKFYAEKDLAEVKAFAREHLGLADFPQWDLSYAGEKLREAKYAFSETEVKKYFPVGG					

a128-1.seq

	1	ATGACTGACA	ACGCACTGCT	CCATTTGGGC	GAAGAACCCC	GTTTTCATCA
25	51	AATCAAAACC	GAAGACATCA	AACCCGCCCT	GCAAACCGCC	ATTGCCGAAG
	101	CGCGCGAACA	AATCGCCGCC	ATCAAAGCCC	AAACGCACAC	CGGCTGGGCA
	151	AACACTGTGC	AACCCCTGAC	CGGCATCACC	GAACGCGTCG	GCAGGATTTG
	201	GGCGCTGGTG	TGCGACCTCA	ACTCCGTCAC	CGACACGCCC	GAACTGCGCG
30	251	CCGCCCTACA	TGAATTAAATG	CCCGAAATTA	CCGTCTTCTT	CACCGAAATC
	301	GGACAAGACA	TGAGAGTGTA	CAACCGCTTC	AAACCATCA	AAACTCTCCC
	351	CGAGTTGCAC	ACCCCTCTCC	ACCGCGAAAA	AACCAACTC	AACCCAGATC
	401	TGCGCGATT	CGTCTCAGC	GCGCGGAAAC	TGCGCGGACA	ACAGCAGGCA
	451	GAATTGCGAA	AACTGCAAAAC	CGAAGGCGCG	CACCTTTCCG	CCAAATTCTC
35	501	CCAAAACGTC	CTAGACGCGA	CCGACGCGTT	CGGCATTTAC	TTTGACGATG
	551	CCGCACCGCT	TGCCCGCAT	CCCGAAGACG	CGCTCGCCAT	GTTTGGCCGT
	601	GCCGCGCAAA	GCGAAGGCAA	AACAGGCTAC	AAATTCGGTT	TGCAGATTCC
	651	GCACTACTTC	GCCCTCATCC	AATACGCCGA	CAACCGCAAA	CTGCGCGAAC
	701	AAATCTACCG	CGCCTACCTT	ACCCGCGCCA	CGCAGCTTTC	AGACGACGGC
	751	AAATTTCGACA	ACACCGCCAA	CATCGACCGC	ACGCTCGAAA	ACGCCCTGCA
40	801	AACCGCCAAA	CTGCTCGGCT	TCAAAAACTA	CGCCGAATTG	TCGCTGGCAA
	851	CCAAATTEGC	GGACACCCCT	GAACAAGTTT	TAAACTTCTT	GCACGACCTC
	901	GCCCGCCGCG	CCAAACCTCA	CGCGAAAAAA	CAGCTCGCCG	AAGTCCAAAGC
	951	CTTCGCCCGC	GAAGGCCTCG	GCCTCGCCGA	TTTGCAACCG	TGGGACTTGG
	1001	GCTACGCCGG	CGAAAACTG	CGCGAAGCCA	AATACGCATT	CAGCGAAACC
45	1051	GAAGTCAAAA	AATACTTCCC	CGTCGGCAAA	GTATTAAACG	GACTGTTCCG
	1101	CTAAGTCAAA	AAACTCTACG	GCATCGGATT	TACGCAAAAA	ACCGTCCCCG
	1151	TCTGGCATAA	AGACGTGCGC	TATTTTGAAT	TGGCAACAAA	CGGCGAAACC
	1201	ATAGGCGGCG	TTTATATGGA	TTTGTAACGA	CGCGAAGGCA	AACGCGGCGG
	1251	CGCGTGGATG	AACGACTACA	AAGGCCGCGC	CCGTTTTTCA	GACGGCACGC
50	1301	TGCAACTGCC	CACCGCTTAC	CTCGTCTGCA	ACTTCACCCC	GCCCGTCGGC
	1351	GGCAAGAAG	CCCGCTTGAG	CCATGACGAA	ATCCTCACCC	TCTTCCAGCA
	1401	AACCGGACG	CGCCTGCACC	ACCTGCTTAC	CCAAGTCGAC	GAACTGGGCG
	1451	TATCCGGCAT	CAACGGCGTA	GAATGGGACG	CAGTCGAAC	CCCCAGTCAG
	1501	TTTATGGAAG	ATTTCTGTTG	GGATACAAT	GTCTTGGCGC	AAATGTCCGC
55	1551	CCACGAAGAA	ACCGGCGTTC	CCCTGCCGAA	AGAACTCTTC	GACAAAATGC
	1601	TCCGCGCCAA	AAACTTCCAA	GCGGGAATGT	TCCTCGTCCG	CCAAATGGAG
	1651	TTCCGCTCTT	TTGATATGAT	GATTTACAGC	GAAGACGACG	AAGGCCGTCT
	1701	GAAAACTGG	CAACAGGTTT	TAGACAGCGT	GCGCAAGAA	GTGCGCGTCG
	1751	TCCGACCGCC	CGAATACAAC	CGCTTCGCCA	ACAGCTTCGG	CCACATCTTC
60	1801	GCAGGCGGCT	ATTCCGACGG	CTATTACAGC	TACGCGTGGG	CGGAAGTATT
	1851	GAGCGCGGAC	GCATACGCGC	CTTTTGAAGA	AAGCGACGAT	GTCCGCGCCA
	1901	CAGGCAAAACG	CTTTTGGCAG	GAAATCCTCG	CGCGTCGCGG	ATCGCGCAGC

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1951 GCGGCAGAAAT CCTTCAAAGC CTTCCGCGGA CGCGAACCGA GCATAGACGC
2001 ACTCTTGCGC CACAGCGGCT TCGACAACGC GGCTTGA

This corresponds to the amino acid sequence <SEQ ID 1021; ORF 128-1.a>:

5 a128-1.pep
1 MTDNALLHLG EEFKFDQIKT EDIKPALQTA IAEAREQIAA IKAQHTGTGWA
51 NTVEPLTGIT ERVGRWGVV SHLNSVTDTF ELRAAYNELM PEITVFFTEI
101 GQDIELYNRF KTIKNSPEFD TLSHAQTKL NHDLRDFVLS GAELPPEQQA
151 ELAKLQTEGA QLSAKFSQNV LDATDAFGIY FDDAAPLAGI PEDALAMFAA
201 AAQSEGKTCY KIGLQIPHYL AVIQYADNRK LREQIYRAYV TRASELSDDG
251 KFDNTANIDR TLLENALQTA KLLGFKNYAEL SLATKMAADTP EQVLNLFHDL
301 AAKAFYAER DLAEVKAFAR ESLGLADLPQ WDLGYAGEKL REAKYAFSET
351 EVKKYFFVGK VLNGLFAQIK KLYGIGFTEK TVPVVHKDVR YFELQONGET
401 IGGVYMDLYA REGKRGGAWM NDYKGRKRF S DGTQLQPTAY LVCNFTFPVG
451 GKEARLSEDE JTLFHEHETG GLHLLTQVD ELGVSGINGV EWDAVELPSQ
501 PMENFVWYIN VLAQMSAHEE TGVFLFKELF DKMLAAKNFQ RGMFLVRQME
551 FALFDMMIYS EDDEGLKKNW QCVLLSVRKE VAVVRPPEYN RFANSFGHIF
601 AGGYSAGYYS YAWAEVLSAD AYAATEESDD VAATGKRFWQ EILAVGGSRS
651 AAESFKAFRG REPSIDALLR HSGFDNAA*

m128-1/a128-1 ORFs 128-1 and 128-1.a showed a 97.8% identity in 677 aa overlap

		10	20	30	40	50	60
25	a128-1.pep	MTDNALLHLGEEPRFDQIKTEDIKPALQTAIAEAREQIAAIIKAQHTGTGWANTVEPLTGIT					
	m128-1	MTDNALLHLGEEPRFDQIKTEIKPALQTAIAEAREQIAAIIKAQHTGTGWANTVEPLTGIT					
		10	20	30	40	50	60
30	a128-1.pep	70	80	90	100	110	120
		ERVGRWGVVSHLNSVTDTFELRAAYNELMPEITVFFTEIGQDIELYNRFKTIKNSPEFD					
	m128-1	ERVGRWGVVSHLNSVADTFELRAAYNELMPEITVFFTEIGQDIELYNRFKTIKNSPEFD					
		70	80	90	100	110	120
35	a128-1.pep	130	140	150	160	170	180
		TLSHAQTKLNHDLRDFVLSGAELPPEQQAELAKLQTEGAQLSAKFSONVLDAATDAFGIY					
	m128-1	TLSHAQTKLNHDLRDFVLSGAELPPEQQAELAKLQTEGAQLSAKFSONVLDAATDAFGIY					
		130	140	150	160	170	180
40	a128-1.pep	190	200	210	220	230	240
		FDDAAPLAGIPEDALAMFAAAQSEGKTCYKIGLQIPHYLAVIQYADNRKLREQIYRAYV					
	m128-1	FDDAAPLAGIPEDALAMFAAAQSEGKTCYKIGLQIPHYLAVIQYADNRKLREQIYRAYV					
		190	200	210	220	230	240
45	a128-1.pep	250	260	270	280	290	300
		TRASELSDDGKFDNTANIDRTLENALQTA KLLGFKNYAELSLATKMAADTP EQVLNLFHDL					
	m128-1	TRASELSDDGKFDNTANIDRTLENALQTA KLLGFKNYAELSLATKMAADTP EQVLNLFHDL					
		250	260	270	280	290	300
50	a128-1.pep	310	320	330	340	350	360
		AAKAFYAERDLAEVKAFARESLGLADLPQWDLGYAGEKLREAKYAFSETEVKKYFFVGK					
	m128-1	AAKAFYAERDLAEVKAFARESLGLADLPQWDLGYAGEKLREAKYAFSETEVKKYFFVGK					
		310	320	330	340	350	360
55	a128-1.pep	370	380	390	400	410	420
		VLNGLFAQIKKLYGIGFTEKTVPVVHKDVR YFELQONGETIGGVYMDLYAREGKRGGAWM					
	m128-1	VLNGLFAQIKKLYGIGFTEKTVPVVHKDVR YFELQONGETIGGVYMDLYAREGKRGGAWM					

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		370	380	390	400	410	420
		430	440	450	460	470	480
5	a128-1.pep	NDYKGRKRFSDGTLQLPTAYLVCNFTFPVGGKEARLSHDEILTLFHETGHLHLLTQVD					
	m128-1	NDYKGRKRFSDGTLQLPTAYLVCNFAFPVGGREARLSHDEILILFHETGHLHLLTQVD					
		430	440	450	460	470	480
10	a128-1.pep	ELGVSGINGVEWDAVELPSQFMENFVWEYNVLAQMSAHEETGVPLPKELFDKMLAAKNFQ					
	m128-1	ELGVSGINGVEWDAVELPSQFMENFVWEYNVLAQMSAHEETGVPLPKELFDKMLAAKNFQ					
		490	500	510	520	530	540
15	a128-1.pep	RGMFLVRQMEFALFDMMIYSEDDDEGLKNWQVLDVSRKEVAVVRPPEYNRFANSFGHIF					
	m128-1	RGMFLVRQMEFALFDMMIYSEDDDEGLKNWQVLDVSRKKVAVIQPPEYNRFALSFGHIF					
		550	560	570	580	590	600
20	a128-1.pep	AGGYSAGYYSYAWAEVLSADAYAAFEESDDVAATGKRFWQEILAVGGSRSAAESFKAFRG					
	m128-1	AGGYSAGYYSYAWAEVLSADAYAAFEESDDVAATGKRFWQEILAVGGSRSAAESFKAFRG					
		610	620	630	640	650	660
25	a128-1.pep	REPSIDALLRHSGFDNAAX					
	m128-1	REPSIDALLRHSGFDNAVX					
		670	679				
30							

206

35

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1022>:

	m206.seq	
	1	ATGTTTCCCC CCGACAAAAC CCTTTTCCTC TGTCTCAGCG CACTGCTCCT
	51	CGCCTCATGC GGCACGACCT CCGGCAACA CCGCCAACCG AAACCCAAAC
40	101	AGACAGTCCG GCAATCCAA GCCGTCCGCA TCAGCCACAT CGACCGCACA
	151	CAAGGCTCGC AGGAATCAT GCTCCACAGC CTCGGACTCA TCGGCACGCC
	201	CTACAAATGG GCGGCAGCA GCACCGCAAC CGGCTTCGAT TGCAGCGGCA
	251	TGATTCAATT CGTTTACAAT AACGCCCTCA ACGTCAAGCT GCCGCGCACC
	301	GCCCGCGACA TGGCGGCGGC AAGCCGAAA ATCCCGGACA GCCGCTCAA
45	351	GGCCGGCGAC CTCGTATTCT TCAACACCGG CGGCGCACAC CGCTACTCAC
	401	ACGTCCGACT CTACATCGGC AACGGCGAAT TCATCCATGC CCCAGCAGC
	451	GGCAAAACCA TCAAACCGA AAAACTCTCC ACACCGTTT ACGCCAAAAA
	501	CTACCTCGGC GCACATACTT TTTTACAGA ATGA

50 This corresponds to the amino acid sequence <SEQ ID 1023; ORF 206>:

	m206.pep..	
	1	MFPDPKTLFL CLSALLLASC GTTSGKHROP KFKQTVRQIQ AVRISHIDRT
	51	QGSQELMLHS LGLIGTPYKW GGESTATGFD CSGMIQFVYK NALNVKLPR
	101	ARDMAAASKK IPDSRXKAGD LVFFNTGGAH RYSHVGLYIG NGEFIHAPSS
55	151	GKTIKTEKLS TPFYAKNYLG AHTFFTE*

The following partial DNA sequence was identified in *N. gonorrhoeae* <SEQ ID 1024>:

	g206.seq	
	1	atgttttccc cgcacaaaac ccttttcctc tgtctcggcg cactgctcct

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5
10

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11  cgcctcatgc ggcacgacct ccggcaaac ccccaaccg aaacccaac
101 agacagtcgg gcaaatccaa gccgtccgca tcagccacat cggccgcaca
151 caaggctggc aggaactcat gctccacagc ctccgactca tcggcagccc
201 ctacaaatgg ggcggcagca gcaccgcaac cggcttcgac tgcagcggca
251 tgattcaatt ggtttacaaa aacgcccica acgtcaagct gccgcgcacc
301 gcccgcgaca tggcggcgcc aagccgcgaa atccccgaca gccgcctcaa
351 ggcggcgcac atcgtattct tcaacacccg cggcgccacac cgtactcac
401 acgtcggact ctacatcggc aacggcgaa tcatccatgc ccccgcgagc
451 ggcacaaacca tcaaaacgga aaaaactctc acaccgtttt accccaacaa
501 ctaccttggg gcgcatacgt tttttacaga atga

```

This corresponds to the amino acid sequence <SEQ ID 1025; ORF 206.ng>:

g206.pep

```

1  MFSPDKTLFL CLGALLLASC GTTSGKHRCF KPKQTVRQIQ AVRISHIGRT
51  QGSELMLHS LGLIGTPYKW GGSSTATGFD CSGMIQLVYK NALNVKLPRF
101 ARDMAAASRK IPSEFLKAGD IVFFNTGGAH RYSHVGLYIG NGEFIHAPGS
151 GKTIKTEKLS TPFYAKNYLG AHFFPTE*

```

20 ORF 206 shows 96.0% identity over a 177 aa overlap with a predicted ORF (ORF 206.ng) from *N. gonorrhoeae*:

m206/g206

```

25  m206.pep  10      20      30      40      50      60
      MFSPDKTLFLCLGALLLASC GTTSGKHRCF KPKQTVRQIQAVRISHIDRTQGSQELMLHS
      |||||||
g206      MFSPDKTLFLCLGALLLASC GTTSGKHRCF KPKQTVRQIQAVRISHIGRTQGSQELMLHS
      10      20      30      40      50      60

30  m206.pep  70      80      90      100     110     120
      LGLIGTPYKWGGESTATGFD CSGMIQLVYK NALNVKLPRFARDMAAASRKIPDSRLKAGD
      |||||||
g206      LGLIGTPYKWGGESTATGFD CSGMIQLVYK NALNVKLPRFARDMAAASRKIPDSRLKAGD
      70      80      90      100     110     120

35  m206.pep  130     140     150     160     170
      LVFFNTGGAHRYSHVGLYIGNGEFIHAPGSGKTIKTEKLS TPFYAKNYLGAHTFFTEX
      :|||||
g206      IVFFNTGGAHRYSHVGLYIGNGEFIHAPGSGKTIKTEKLS TPFYAKNYLGAHTFFTE
      130     140     150     160     170

```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1026>:

a206.seq

```

45  1  ATGTTTCCCC CCGACAAAAC CCTTTTCCTC TGTCTCAGCG CACTGCTCCT
      51  CGCCTCATGC GGCACGACCT CCGGCAAACA CCGCCAACCG AAACCCAAAC
101  AGACAGTCCG GCAAAATCCAA GCCGTCCGCA TCAGCCACAT CGACCGCACA
151  CAAGGCTCGC AGGAALCTCAT GCTCCACAGC CTCGGACTCA TCGGCACGCC
201  CTACAAATGG GCGGCGAGCA GCACCGCAAC CGGCTTCGAT TGCAGCGGCA
50  251 TGATTCAATT CGTTTACAAA AACGCCCTCA ACCTCAAGCT GCCGCGCACC
      301  GCCGCGGACA TGGCGGCGGC AAGCCGCAAA ATCCCCGACA GCCGCCTTAA
      351  GCGCGCGGAC CTCGTATTCT TCAACACCGG CCGCGCACAC CGCTACTCAC
401  ACCTCGGACT CTATATCGGC AACGGCGAAT TCATCCATGC CCCCAGCAGC
451  GGCAAPACCA TCAAAACCGA AAAACTCTCC ACACCGTTT ACGCCAALAA
55  501 CTACCTCGGC GCACATACCT TCTTTACAGA ATGA

```

This corresponds to the amino acid sequence <SEQ ID 1027; ORF 206.a>:

a206.pep

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```

1  MFPPDKTLFL CLSALLLASG GTTSGKHKOPF KPKQTVRQIQ AVRISHIDRT
51 QGSQELMLHS LGLIGTFYRW GGSSTATGFD CSGMIQFVYK NALNVKLPRT
101 ARDMAAASRY IPDSRLKAGD LVFFNTGGAH RYSHVGLYIG NGEFIHAPSS
151 GHTIKTEKLS TPFYAKNYLG AHTEFTE*

```

5

m206/m206 ORFs 206 and 206.a showed a 99.4% identity in 177 aa overlap

```

10 m206.pep 10 20 30 40 50 60
      MFPPDKTLFLCLSALLLASCGTTSKHKOPFHKQTVRQIQAVRISHIDRTQGSQELMLHS
      |||
10 a206 10 20 30 40 50 60
      MFPPDKTLFLCLSALLLASCGTTSKHKOPFHKQTVRQIQAVRISHIDRTQGSQELMLHS
      |||

15 m206.pep 70 80 90 100 110 120
      LGLIGTFYRWGGSSTATGFD CSGMIQFVYKNALNVKLPRTARDMAAASRKIPDSRLKAGD
      |||
15 a206 70 80 90 100 110 120
      LGLIGTFYRWGGSSTATGFD CSGMIQFVYKNALNVKLPRTARDMAAASRKIPDSRLKAGD
      |||

20 m206.pep 130 140 150 160 170
      LVFFNTGGAHRYSHVGLYIGNGEFIHAPSSGHTIKTEKLS TPFYAKNYLG AHTTEFTE*
      |||
20 a206 130 140 150 160 170
      LVFFNTGGAHRYSHVGLYIGNGEFIHAPSSGHTIKTEKLS TPFYAKNYLG AHTTEFTE*
      |||

```

25

287

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1028>:

```

m287.seq
1  ATGTTTAAAC GCAGCCTAAT CGCAATGGCT TGTATTTTTC CCCTTTCAGC
51 CTGCGGGGGC GCGCGTGGCG GATCGCCCGA TGTCAAGTCG GCGGACACGC
101 TGTCAAACCC TCCCGCCCTT GTTGTTCCTG AAAAAGAGAC AGAGGCATAAG
35 151 GAAGATGCGC CACAGCCAGG TTCTCAAGGA CAGGGCGCGC CATCCGCACA
      201 AGGCACTCAA GATATGCGCG CGGTTTCGGA AGAAATACA GGCATGGCG
      251 GTCCGCTAAC AGCGGATAAT CCCAAATATC AAGACGAGGT GGCACAAAT
      301 GATATGCCGC AAAATGCCGC CGGTACAGAT AGTTCGACAC CGATACACAC
      351 CCCGATCCG AATATGCTTG CCGGAATATC GGAATACAA GCACCGGATG
40 401 CCGGGGAATC GTCTCAGCCG GCAAACCAAC CGGATATGGC AATGCGGCG
      451 GACGGAATGC AGGGGACGA TCCGTCCGCA GCGGGCATA ATGCGGCAA
      501 TACGGCTGCC CAGGCTGCA ATCAAGCCGG AACCAATCAA CCGCGCGGT
      551 CTTGAGATCC CATCCCCCGG TCAAAACCTG CACCTGCCAA TGCGGCTAGC
      601 AATTTTGGAA GGGTTGATTT GGCTAATGGC GTTTTGATTG ACGGGCCGTC
45 651 GCAAAATATA ACGTTGACCC ACTGTAAAGG CGATTCTTGT AGTGGCAATA
      701 ATTTCTTGGG TGAAGAACTA CAGCTAAAT CAGAATTTGA AAAATTAAGT
      751 GATGCAGACA AAATAAGTAA TTACAAGAAA GATGGGAAGA ATGATAAATT
      801 TGTCCGTTTC GTTCCCGATA GTCTGCAGAT GAAGGGAATC AATCAATATA
      851 TTATCTTTTA TAAACCTAAA CCCACTTCAT TTGCGCGATT TAGGCGTTCT
50 901 GCACGGTCGA GCGGTCGCT TCCGGCCGAG ATGCCGCTGA TTCCGCTCAA
      951 TCAGGCGGAT ACGCTGATTG TCGATGGGGA AGCGGTCAGC CTGACGGGGC
1001 ATTCCGGCAA TATCTTCGCG CCCGAAGGGA ATTACCGGTA TCTGACTTAC
1051 GGGGCGGAAA AATTGCCCGG CGGATCGTAT GCCCTTCGTG TTCAAGGCGA
1101 ACCGGCAAAA GCGGAATGC TTGCGGGCGC GCCCTGTAC AACGGCGAAG
55 1151 TACTGCATTT CCATACGGAA AACGGCCGTC CGTACCCGAC CAGGGGCAGG
      1201 TTTGCCGCAA AAGTCGATT CGGCAGCAA TCTGTGGACG GCATTATCGA
      1251 CAGCGCGGAT GATTTGCTA TGGGTACGCA AAAATTCAA GCCGCCATCG
      1301 ATGGAACGCG CTTTAAAGGG ACTTGGACGG AAAATGGCAG CGGGGATGTT
      1351 TCCGGAAAGT TTTACGGCCC GCGCGCGGAG GAAGTGGCGG GAAATACAG
60 1401 CTATCGCCCG ACAGATGCGG AAAAGGCGCG ATTGCGCGTG TTTGCCGGCA

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1451 AAAAGAGCA GGATTGA

This corresponds to the amino acid sequence <SEQ ID 1029; ORF 287>:

```

5      m287.pep
      1  MYKRSVIAMA CIIAISACGG GGGGSPDVKS ADTLSKFAAF VVSEKETLAK
      51  LLIFQAGSOG QGAFSAQGSQ DMAANSEENT GNCGAVTADN FKNEDVAQN
     101  DMFQNAAGTI SCTPKNFIF NMLAGNMENQ ATDAGESSOF ANQIDMANAA
     151  DCMOGDLISA GGCNAGNTAA QGANQAGNNQ AAGSSDFIPA SNIAFANGGS
     201  NFGKVDLANG VILDGFSQNT TLTECKGDESC SGNNFLDEIV QLKSEFEKLS
     251  DADKISNYRK DQKNLKFGVL VAESVQMEGI NQYIIFYKPK PTFARFRRS
     301  AFSEKSLFAE KIIIVNQAI TLIVDGEAVS LTGHSGNIFA FEGNYRYLTY
     351  GAELKPGGSY ALAVQGLFAK GEMLAGAAYV NGEVLEFETI NGFIYFTGR
     401  FARKYDFGSK SVDFLISGT DLHMGTQKFK AAIDGNGFKG TWTEGSGEDV
     451  SGKFYGFAGL FVAGKYSYR TLAEKGGFGV FAGKKEQL*

```

The following partial DNA sequence was identified in *N. gonorrhoeae* <SEQ ID 1030>:

```

20      g287.seq
      1  atgttttaac gcaqicqcal tgcattggct tctatttttc ccttttcaqc
      51  ctgtcggggc ggcgctggcg cctcgcccca tctcaagtcg cccgacacgc
     101  cgtcaaaacc ggcgcccccc gttgttgcic aaaaatgccc ggaacgggtg
     151  ctgcccgaag aaacgaaaag tgcggagcca cgggcccgtg ccccgcaagc
     201  cgtatccgag cctcgaaccc cccgagaaag cagccaaagt atcccgccag
     251  ttctggcaga aaatccagcc aaagccggtg cggcaacaac cgcacacccc
     301  aaaaatgaag acccgccggc ccaaaatgat atcccgcaaa atcccgccga
     351  atccgcaaat caaacggga caaaccaacc cggcggttct tcaattccg
     401  cccccggc acaccccgcc cctgcgaatg cgggtagcca tttggcaagg
     451  acgaacgtgg ccaattctgt tctgattgac ggcaccgtgc aaaaataaac
     501  gtgacccac tgaagagggc attcttgaat tggtagaat ttattggatg
     551  aagaaacacc gtaaaaac caatttgaaa aatttaagta tgaagaaaaa
     601  attaaagcat aaaaaaaag cagagcaacc gagaatttgc tccgtttggt
     651  tcttgacagg gtaaaaaag aaggaaacta caaatatata atcttata
     701  cggacaaaac acctactcgt tctgcacggt cagggaggct ccttccggcc
     751  ggaattccgc tcaattccgt caatcaggcc gatacgtga ttgtggatg
     801  gcaagcggtc agcctgacgg ggcattccgg caatatcttc cgcgccgaag
     851  gcaattacgg gtatctgact tacggggcgg aaaaattgcc cggcggatcg
     901  tatgcccctc gtgtgcaagg cgaaccggca aaagggcaaa tgcctgttgg
     951  caccggccgt tacaaccggc aagtgctgca ttccatata gaaaacggcc
    1001  gtccgtaccc gtccggagcc agctttgccc caaaagtcga tttcggcagc
    1051  aaatctgtgg accgcatat cgcacgccc gatgatttgc atagggtag
    1101  gcaaaaatic aaagcccca tcatggaaa cggctttaac ggcacttggg
    1151  cggaaaaatg cggcggggtt gttccggaa ggttttacg cccggccggc
    1201  gacggaagtc cggcaaaata cagctatcgc ccgacagatg ctgaaaaggg
    1251  cggattccgc gtgtttgccc gcaaaaaaga tcgggattga

```

This corresponds to the amino acid sequence <SEQ ID 1031; ORF 287.ng>:

```

50      g287.pep
      1  MFKRSVIAMA CIIFLSACGG GGGGSPDVKS ADTFSKFAAF VVAENAGEGV
      51  LPKEKKDEEA AGGAPQADTQ DATAGEGSQD MAAVSAENTG NGGAATTDNP
     101  KNEDAGAOND MPQNAAESAN QTGNNOFAGS SDSAFASNFA PANGGSDFGF
     151  TNVGNVVVD GPSQNTLTH CKGDSNGNDN LLDEEAFSKS EFELSDDEEK
     201  IKRYKKDEQR ENFVGLVADR VKKDGTKNYI IFYTDKPPTR SARSRSLFA
     251  EPLIFVNQA DTLIVDGEAV SLTGHSGNIF APEGNYRYLT YGAELKPGGS
     301  YALRVQGEFA KGEMLVGTAV YNGEVLFHFM ENGRFYFSGG RFAAKVDFGS
     351  KSVDGIIISG DDLHMGTQKF KALIDGNGFK GTWTENGSGD VSGRFYGPAG
     401  EEVAGKYSYR PTDAEKGGFG VFAGKKDRD*

```

m287/g287 ORFs 287 and 287.ng showed a 70.1% identity in 499 aa overlap

60

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```

      10      20      30      40      49
m287.pep MEKRSVIAMACIFALSACGGGGGSPDNKSADTLKFAAPVSE-----KETE
      |||||
g287     MFKRSVIAMACIFFLSACGGGGGSPDNKSADTFKPAAPVVAENAGEGVLPKEKKDEEA
      10      20      30      40      50      60

      50      60      70      80      90      100     109
m287.pep KEDAFQAGSQGGGAPSAQGSQDMAAVSEENTGNGGAVTADNPKNEDEVAQNDMPQNAAGT
      |||||
g287     AGGAFQANTQD--ATAGEGSQDMAAVSAENTGNGGAATTDNPKNEDAGAONDMPQNA--
      70      80      90      100     110

      110     120     130     140     150     160     169
m287.pep ESSTENHTFDPNMLAGNMENQATLAGESSCPANQPDMAAADGMQDDPSAGGQNAAGTA
g287     -----

      170     180     190     200     210     220     229
m287.pep AQGANQAGNNQACSSDFIPASRFAPANGGSGNFGVVDLANGVLIDGFSQNTLTTHCKGDS
      |||||
g287     -ESANQAGNNQACSSDFIPASRFAPANGGSGNFGVVDLANGVLIDGFSQNTLTTHCKGDS
      120     130     140     150     160     170

      230     240     250     260     270     280     289
m287.pep CSGNNFLDEEVQLKSEFEKLSDEAKISNYKKDGKNDKRFVGLVADSVQMKGINQYIIFYKF
      |||||
g287     CNGDNLLDEELAFKSEFEKLSDEEKIKKRYKKDEORENFVGLVADRVKKDGTNKYIIFYTD
      180     190     200     210     220     230

      290     300     310     320     330     340     349
m287.pep KFTSFARFRRSARSRRSLPAEMFLIPVQADTLIVDGEAVSLTGHSQNIFAPEGNYRYLT
      |||
g287     KFPT-----RSARSRRSLPAELFLIPVQADTLIVDGEAVSLTGHSQNIFAPEGNYRYLT
      240     250     260     270     280     290

      350     360     370     380     390     400     409
m287.pep YGAEKLPGGSYALRVQGEPAKCEMLAGAAVYNGEVLHFHTENGRFYPTGRGFAAKVDFGS
      |||||
g287     YGAEKLPGGSYALRVQGEPAKCEMLVGTAVYNGEVLHFHMENGRFYPSGGRFAAKVDFGS
      300     310     320     330     340     350

      410     420     430     440     450     460     469
m287.pep KSVDTGJIDSGDDLHMGTQKFKAAIDGNGFKGTWTENGSGDVSGKFGYPAGEEVAGKYSYR
      |||||
g287     KSVDTGJIDSGDDLHMGTQKFKAAIDGNGFKGTWTENGSGDVSGRFGYPAGEEVAGKYSYR
      360     370     380     390     400     410

      470     480     489
m287.pep PTDAEKGGFGVFAGKKEQDX
      |||||
g287     PTDAEKGGFGVFAGKKDRDX
      420     430

```

55 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1032>:

```

a287.seq
1  ATGTTTAAAC GCAGTGTGAT TGCAATGGCT TGTATTGTTG CCCTTTCAGC
51  CTGTGGGGGC GCGGTGCGG GATCGCCGA TGTAACTCG GCGGACACGC
101 TGTCAAACCC TCGCGCCCT GTTGTACTG AAGATGTCG GGAAGAGGTG
151 CTGCCGAAAG AAAAGAAAG TGAGGAGGCG CTGAGTGCTG CGCCGCAAGC
201 CGATACGCAG GACGCAACCG CCGGAAAAG CGGTCAAGAT ATGGCGGCAG
251 TTTCCGCAGA AAATACAGCG AATGCGGCTG CGGCAACAAC GGATAATCCC

```

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303 GAAATTAAG ACCAGGGACC GCAATATGAT ATGCCGCAAA ATGCCGCCGA
 353 TACAGATAGT TCGACACCGA ATCACHCCCC TGCACCGAAT ATGCCCAACA
 403 GACATATCGG AATCCAGCA CCGGATGCCG GGAATCGGC ACAACCGGCA
 453 AACCAACCGG ATATGGCATA TCGGCGGAC GGAATGCAGG GGCACGATCC
 503 GTTGGCAGGG GAAATGCCG GCAATACGGC AGATCAAGCT GCAATCAAG
 553 CTGAAACAA TCACTCGGC GGTCTCTCAA ATCCTGCCTC TTCAACCAAT
 603 CCTAACGCCA CGAATGCCG CAGCGATTTT GGAAGGATAA ATGTAGCTAA
 653 TGGCATCAAG CTTCACAGCG GTTCGAAA TGTAACGTTG ACACATTGTA
 703 AAGACAAAGT ATCGCATAGA GATTTCTTAG ATGAAGAGC ACCACCAAAA
 753 TCAGAAATTG AATAATTAG TGAAGAGAA AAAATTATA AATATAAAAA
 803 AGACAGCAA CGACAGAAAT TTGTCTGTTT GGTTCGTGAC AGGGTAGAAA
 853 AGAATGGAAC TAACTAAT GTCATCATTT AATAAGACA CTCGCTTCA
 903 TCTTCATCTG CGCATTCAG GCGTCTGCA CGGTGAGGC GGTGCTTCC
 953 GGCAGAGTG CCGCTGATTC CCGTCAATCA GCGGATACG CTGATTGTCG
 1003 ATGGGGAAGC GGTGACCTTC ACGGGCAAT CCGGCAATAT CTTCGCGCC
 1053 GAAGGGAATT ACCGCTATCT GACTTACGGG GCGGAAATAT TGTCCGCGG
 1103 ATCGTATGCC CTCATGTGCG AAGCGAACC GGCAAAAGC GAAATGCTTG
 1153 CGGGCACGGC CGTCTAAC GCGGAGTGC TGCATTCCA TATGGAAGC
 1203 GCGCGTCCGT CCGCTCCG AAGCAGGTTT GCGGCAAG TCGATTTCGG
 1253 CAGCAATCT GTGGACGGCA TTATCGACAG CGCGCATGAT TTGCATATGG
 1303 GTACGCAAAA ATTCAAGCC GTATCGATG GAAACGGCTT TAAGGGGACT
 1353 TGGACGGAAT ATGCCGCGG GGTCTTTC GGAAGGTTT ACCGCGCGG
 1403 CCGCGAAGAA CTGCGCGGA AATACAGCTA TCGCCGACA GATCGCGAAA
 1453 AGGCGGGATT CCGCTCTTT GCGGCAAAA AAGAGCAGGA TTGA

This corresponds to the amino acid sequence <SEQ ID 1033; ORF 287.a>:

a287.pep
 1 MFKRSVIAMA CIVALSACGG GGGGSPDVKS ADTLSKFAAF VVTEDVGEEV
 51 LPKEKKDELA VSGAPQADTQ DATAGKGGQD MAVSAENTG NGGAATTDNP
 101 ENKDEGFQND MPQNAADTIS STPNHTFAPN MPTRDMGNQA FDAGESAQPA
 151 NQPDMAAZAD GMQDDPSAG ENAGNTADQA ANQAEENQVG GSONFASSTN
 201 PNATNGGSLF GRINVANGIK LBSGSENVTL THCKDKVCDR DFLDEEAPPK
 251 SIFFKLSDEL KINKYKDEQ RENFVGLVAD RVEKNGTKKY VIIYKDKSAS
 301 SSSARFRSA RSRRSLPAEM FLIFVQADT LIVDGEAVSL TGHSGNIFAP
 351 EGNKYLYTYG AEKLSGGSYA LSVQGEPAKG EMLAGTAVYN GEVLHFHMEN
 401 GRFSPSGGRF AAKVDFGSKS VDGIIISGDD LHMGTQKPKA VIDGNGFKGT
 451 WTENGCGDVS GRFYGFAGEE VAGKYSYRPT DAEKGGFGVF AGKKEQD*

m287/a287 ORFs 287 and 287.a showed a 77.2% identity in 501 aa overlap

40
 10 20 30 40 49
 m287.pep MFKRSVIAMACIFALSACGGGGGGSPDVKSADTLSKFAAPVSE-----KETE
 a287 MFKRSVIAMACIVALSACGGGGGGSPDVKSADTLSKFAAPVVTEDVGEEVLPKEKKDEEA

45
 10 20 30 40 50 60
 m287.pep KEDAPQAGSGQGAPSAQGSQDMAAVSEENTGNGGAVTADNPKNEDEVAQNMDMPQNAAGT
 a287 VSGAFQADTQ--DATAGKGGQDMAVSAENTGNGGAATTDNPFENKDEGFQNDMPQNAADT

50
 70 80 90 100 110
 m287.pep KEDAPQAGSGQGAPSAQGSQDMAAVSEENTGNGGAVTADNPKNEDEVAQNMDMPQNAAGT
 a287 VSGAFQADTQ--DATAGKGGQDMAVSAENTGNGGAATTDNPFENKDEGFQNDMPQNAADT

55
 110 120 130 140 150 160 169
 m287.pep DFTSTPNHTFAPNMLAGNMENQATLAGESSQFANQPDMAAADGMQDDPSAGGQNAAGNTA
 a287 DFTSTPNHTFAPNMTTRDMGNQAFDAGESAQFANQPDMAAADGMQDDPSAG-ENAGNTA

60
 120 130 140 150 160 170
 m287.pep DFTSTPNHTFAPNMTTRDMGNQAFDAGESAQFANQPDMAAADGMQDDPSAG-ENAGNTA
 a287 DQANQAEENQVGCSQNFASSTNPNATNGGSDFGRINVANGIKLBSGSENVTLTHCKDKV

170 180 190 200 210 220 229
 m287.pep AQGANQAGNNQAGSSDFEFASNPANANGGSNFGVELANGVLIDGFSQNTITLTHCKGDS
 a287 DQANQAEENQVGCSQNFASSTNPNATNGGSDFGRINVANGIKLBSGSENVTLTHCKDKV

		160	190	200	210	220	230	
		230	240	250	260	270	280	289
5	m287.pep	CSGNKFLDEEVQLKSEFEKLSLADPKISNYKKLDGKNDKFGVLGVADSVQMKGINQYIIFYKP						
	a287	CD-RLFLDEEAPFKSEFEKLSLEEKINKYKEDQRENFGVLGVADRVEKNGTNKYVIYKDK						
		240	250	260	270	280	290	
10	m287.pep	290	300	310	320	330	340	
	a287	KQ--TSFAKFRSARSRRSLPAEMFLIPVNOAETLIVDGEAVSLTGHSGNIFAPEGNYRY						
		300	310	320	330	340	350	
15	m287.pep	350	360	370	380	390	400	
	a287	LTYGAEKLSGGSYALRVQGEPAKGEMLAGLAVYNGEVLHFHTENGCRPYPTRGRFAAKVDF						
		360	370	380	390	400	410	
20	m287.pep	410	420	430	440	450	460	
	a287	GSKSVLDGLDSGDDLEMTQKFKAAIDGRGFKCTWTENGSGDVSQKFGYPAGEEAVAGKYS						
		420	430	440	450	460	470	
25	m287.pep	470	480	489				
	a287	YRPTDAEKGGFGVFAGKKEQDX						
30	m287.pep	480	490					
	a287	YRPTDAEKGGFGVFAGKKEQDX						

35

m406.seq

	1	ATGCAAGCAC	GGCTGCTGAT	ACCTATTCTT	TTTTCAGTTT	TTATTTTATC
40	51	CGCCTGCGGG	ACACTGCACG	GTAATTCATC	GCATGGCGGA	GGTAAACGCT
	101	TTGCGGTCGA	ACAAGAACTT	GTGGCCGCTT	CTGCCAGAGC	TGCCGTTAAA
	151	GACATGGATT	TACAGGCATT	ACACGGACGA	AAAGTTGCAT	TGTACATTGC
	201	CAGTATGGGC	GACCAAGGTT	CAGGCAGTTT	GACAGGGGGT	CGCTATCCCA
45	251	TTGATGCATT	GATTTCGTGG	GAATACATAA	ACAGCCCTGC	CGTCCGTACC
	301	GATTACACCT	ATCCACGTTA	CGAAACCACC	CTGAAACAA	CATCAGGCGG
	351	TTTGACAGGT	TTAACCACTT	CTTTATCTAC	ACTTAATGCC	CCTGCACTCT
	401	CTCGCACCCA	ATCAGACGGT	AGCGGAAGTA	AAAGCAGTCT	GGGCTTAAAT
	451	ATTGGCGGGA	TGGGGGATTA	TGGAATGAA	ACCTTGACGA	CTAACC CGCG
50	501	CGACACTGCC	TTTCTTTCCC	ACTTGGTACA	GACCGTATTT	TTCTTGCGCG
	551	GCATAGACGT	TGTTTCTCCT	GCCAATGCCG	ATACAGATGT	GTTTATTAAC
	601	ATCGAGCTAT	TCGGAACGAT	ACGCAACAGA	ACCGAATGC	ACCTTATACAA
	651	TGCCGAAACA	CTGAAAGCCC	AAACAAAAC	GGAAATATTT	CGAGTAGACA
	701	GAACCAATAA	AAATTTGCTC	ATCAAACCAA	AAACCAATGC	GTTTGAAGCT
	751	GCCTATAAAG	AAATTTAGCG	ATTGTGGATG	GGGCCGTATA	AAGTAAGCAA
55	801	AGGAATTAAA	CCGACGGAAG	GATTAATGGT	CGATTTCTCC	GATATCCGAC
	851	CATACGGCAA	TGATACGGGT	AACTCCGCCC	CATCCGTAGA	GGCTGATAAC
	901	AGTCATGAGG	GGTATGGATA	CAGCGATGAA	GTAGTGCGAC	AACATAGACA
	951	AGGACAACCT	TGA			

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This corresponds to the amino acid sequence <SEQ ID 1035; ORF 406>:

m406.pep

```

1  MQARLLIPIL FSVFLLSACG TLTGIPSHGG GKRFAVEQEL VAASARAQVK
5  51  DMELQALHGR KVALYIATMG DQSGSGSLTGG RYSIDALIRG EYINSPAVRT
101 101  EYDTPRYETT APTTSGGLTG LTTELSTLNA FALSRTQSDG SGRKSSLGLN
151 151  IGGMGLYRNE TLTNPRITA FLSHLVQTVF FLKGDVWSP ANADTDVFIN
201 201  IIVFCTIRNR TEMHLYNAET LKACTKLEVF AVDRTNKKLL IKPKTNAFEA
251 251  AYKENYALWM GFYKVSKEIK PTEGLMVDPS DIRFYGNHTG NSAPSVEADN
301 301  SHEGYGYSDE VVRQHRQGQP *
```

The following partial DNA sequence was identified in *N. gonorrhoeae* <SEQ ID 1036>:

g406.seq

```

1  ATGCGGGCAC GCGTCTGAT ACCTATTCCT TTTTCAGTTT TTATTTTATC
15 11  CGCCTGCGGG AACTGACAG GTATTCATC GCATGGCGGA GGCAACGCT
101 101  TCGCGGTCCA ACAAGAACT GTGCGCGCT CTGCCAGAGC TGCCGTAAA
151 151  GACATGGATT TACAGGCATT ACACGGACGA AAGTTGCAT TGTACATTGC
201 201  AACTATGGGC GACCAAGGT CAGGCAGTT GACAGGGGGT CGCTACTCCA
251 251  TTGATGCACT GATTGCGGC GALTACATAA ACAGCCCTGC CGTCCGCACC
301 301  GATTACACCT ATCCGCGTTA CGAAACCACC GCTGAAACAA CATCAGGCGG
351 351  TTGACGGGT TTAACCACT CTATTCTTAC ACTTAATGCC CCTGCCTCT
401 401  CCGGCACCCA ATCAGACGCT AGCGGAAGTA GGAGCAGTCT GGGCTTAAT
451 451  ATTGGCGGGA TGGGGGATTA TCGAATGAA ACCTTGACGA CCAACCCGG
501 501  CGACACTGCC TTTCTTTCC ACTTGGTGCA GACCGTATTT TTCTGCGCG
551 551  GCATAGACGT TGTTCCTCT GCCAATGCCG ATACAGATGT GTTTATTAAC
601 601  ATCGACGTAT TCGGAACGAT ACGCAACAGA ACCGAATGC ACCTATACAA
651 651  TGCCGAACA CUGAAAGCCC AAACHAACT GGAATATTC GCAGTAGACA
701 701  GAACCAATAA AAAATTGCTC ATCAAACCCA AAACCAATGC GTTGAAGCT
751 751  GCTATATAAG AATATTACG ATTGTGGATG GGGCCGTATA AAGTAAGCAA
801 801  AGGAATCAA CCGACCGAAG GATTGATGGT CGATTTCTCC GATATCCAAC
851 851  CATACGGCAA TCATACGGGT AACTCCGCC CATCCGTAGA GGCTGATAAC
901 901  ACTCATGAGG GATATGGATA CAGCGATGAA GCAGTGCAG AACATAGACA
951 951  AGGGCAACCT TGA
```

This corresponds to the amino acid sequence <SEQ ID 1037; ORF 406.ng>:

g406.pep

```

35 1  MQARLLIPIL FSVFLLSACG TLTGIPSHGG GKRFAVEQEL VAASARAQVK
50 51  DMELQALHGR KVALYIATMG DQSGSGSLTGG RYSIDALIRG EYINSPAVRT
101 101  EYDTPRYETT APTTSGGLTG LTTELSTLNA FALSRTQSDG SGRKSSLGLN
151 151  IGGMGLYRNE TLTNPRITA FLSHLVQTVF FLKGDVWSP ANADTDVFIN
201 201  IIVFCTIRNR TEMHLYNAET LKACTKLEVF AVDRTNKKLL IKPKTNAFEA
251 251  AYKENYALWM GFYKVSKEIK PTEGLMVDPS DIRFYGNHTG NSAPSVEADN
301 301  SHEGYGYSDE AVRQHRQGQP *
```

45 ORF 406.ng shows 98.8% identity over a 320 aa overlap with a predicted ORF (ORF406.a) from *N. gonorrhoeae*:

g406/m406

```

50 10 20 30 40 50 60
g406.pep MQARLLIPILFSVFLLSACGTITGIPSHGGGKRFQELVAASARAQVKDMDLQALHGR
|||||
m406 MQARLLIPILFSVFLLSACGTLTGIPSHGGGKRFQELVAASARAQVKDMDLQALHGR
10 20 30 40 50 60

55 70 80 90 100 110 120
g406.pep KVALYIATMGDQSGSGSLTGGRRYSIDALIRGEYINSPAVRTDYTPRYETTAETTSGLTG
|||||
```

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m406	KVALYIATMGDQSGSLTGGRYSIDALIRGEYINSPAVRTDYTPRYETTAETTSGGLTG	70	80	90	100	110	120
5	g406.pep	130	140	150	160	170	180
	LTTSLSTLNAPALSRTQSDGSGSRSSLGLNIGMGDYRNETLTNPRDTAFLSHLVQTVF						
m406	LTTSLSTLNAPALSRTQSDGSGSKSSLGLNIGMGDYRNETLTNPRDTAFLSHLVQTVF	130	140	150	160	170	180
10	g406.pep	190	200	210	220	230	240
	FLRGIDVVSPANADTDVFINIDVFGTIRNRTEMHLYNAETLKAQTKLEYFAVDRTNKKLL						
m406	FLRGIDVVSPANADTDVFINIDVFGTIRNRTEMHLYNAETLKAQTKLEYFAVDRTNKKLL	190	200	210	220	230	240
15	g406.pep	250	260	270	280	290	300
	IKPKTNAFEAAAYKENYALWMGPYKVS KGIKPT EGLMVDFS DIQPYGNHTGNSAPSVEADN						
m406	IKPKTNAFEAAAYKENYALWMGPYKVS KGIKPT EGLMVDFS DIRPYGNHTGNSAPSVEADN	250	260	270	280	290	300
20	g406.pep	310	320				
	SHEGYGYSDEAVRQHRQGQPX						
m406	SHEGYGYSDEVVRQHRQGQPX	310	320				

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1038>:

30	a406.seq	1	ATGCAAGCAC	GGCTGCTGAT	ACCTATTCTT	TTTTCAGTTT	TTATTTTATC
		51	CGCCTGCGGG	ACACTGACAG	GTATTCCATC	GCATGGCGGA	GGTAAACGCT
		101	TCGCGGTCTGA	ACAAGAACTT	GTGGCGGCTT	CTGCCAGAGC	TGCCGTTAAA
		151	GACATGGATT	TACAGGCATT	ACACGGACGA	AAAGTTGCAT	TGTACATTGC
		201	AACTATGGGC	GACCAAGGTT	CAGGCAGTTT	GACAGGGGGT	CGTACTCCA
35		251	TTGATGCACT	GATTCGTGGC	GAATACATAA	ACAGCCCTGC	CGTCCGTACC
		301	GATTACACCT	ATCCACGTTA	CGAAACCACC	GCTGAAACAA	CATCAGGCGG
		351	TTTGACAGGT	TTAACCCTT	CTTTATCTAC	ACTTAATGCC	CCTGCACTCT
		401	CGCGCACCCA	ATCAGACGGT	AGCGGAAGTA	AAAGCAGTCT	GGGCTTAAAT
		451	ATTGGCGGGA	TGGGGGATTA	TCGAAATGAA	ACCTTGACGA	CTAACCCGCG
40		501	CGACACTGCC	TTTCTTTCCC	ACTTGGTACA	GACCGTATTT	TTCTGCGCG
		551	GCATAGACGT	TGTTTCTCCT	GCCAATGCCG	ATACGGATGT	GTTTATTAA
		601	ATCGACGTAT	TCGGAACGAT	ACGCAACAGA	ACCGAAATGC	ACCTATACAA
		651	TGCCGAAACA	CTGAAAGCCC	AAACAAAAC	GGAATATTTC	GCAGTAGACA
		701	GAACCAATAA	AAAATTGCTC	ATCAAACCAA	AAACCAATGC	GTTTGAAGCT
45		751	GCCTATAAAG	AAAATTACGC	ATTGTGGATG	GGACCGTATA	AAGTAAGCAA
		801	AGGAATTAAA	CCGACAGAAG	GATTAATGGT	CGATTTCTCC	GATATCCAAC
		851	CATACGGCAA	TCATATGGGT	AACTCTGCCC	CATCCGTAGA	GGCTGATAAC
		901	AGTCATGAGG	GGTATGGATA	CAGCGATGAA	GCACTGCGAC	GACATAGACA
50		951	AGGGCAACCT	TGA			

This corresponds to the amino acid sequence <SEQ ID 1039; ORF 406.a>:

55	a406.pep	1	MQARLLIPIL	FSVFILSACG	TLTGIPSHGG	GKRFVEQEL	VAASARA	AVK
		51	DMDLQALHGR	KVALYIATMG	DQSGSGSLTG	RYSIDALIRG	EYINSPAVRT	
		101	DYTPRYETT	AETTSGLTG	LTTSLSTLNA	PALSRTQSDG	SGSKSSLGLN	
		151	IGMGDYRNE	TLTNPRDTA	FLSHLVQTVF	FLRGIDVVS	PANADTDVFIN	
		201	IDVFGTIRNR	TEMHLYNAET	LKAQTKLEYF	AVDRTNKKLL	IKPKTNAFEA	
		251	AYKENYALWM	GPYKVS KGIK	PTEGLMVDFS	DIQPYGNHMG	NSAPSVEADN	
60		301	SHEGYGYSDE	AVRRHRQGQP	*			

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m406/a406 ORFs 406 and 406.a showed a 98.8% identity in 320 aa overlap

		10	20	30	40	50	60
5	m406.pep	MQARLLIPILFSVFILSACGTLTGIPSHGGGKRFAVEQELVAASARAANKDMDLQALHGR					
	a406	MQARLLIPILFSVFILSACGTLTGIPSHGGGKRFAVEQELVAASARAANKDMDLQALHGR					
		10	20	30	40	50	60
10	m406.pep	KVALYIATMGDQSGSLTGGRYSIDALIRGEYINSPAVRTDYTPRYETTAETTSGLTGT					
	a406	KVALYIATMGDQSGSLTGGRYSIDALIRGEYINSPAVRTDYTPRYETTAETTSGLTGT					
		70	80	90	100	110	120
15	m406.pep	LTTSLSTLNAPALSRTQSDGSGSKSSLGLNIGMGDYRNETLTNPRDTAFLSHLVQTVF					
	a406	LTTSLSTLNAPALSRTQSDGSGSKSSLGLNIGMGDYRNETLTNPRDTAFLSHLVQTVF					
		130	140	150	160	170	180
20	m406.pep	FLRGIDVVS PANADTDVFINIDVFGTIRNRTEMHLYNAETLKAQTKLEYFAVDRTNKKLL					
	a406	FLRGIDVVS PANADTDVFINIDVFGTIRNRTEMHLYNAETLKAQTKLEYFAVDRTNKKLL					
25		190	200	210	220	230	240
	m406.pep	IKPKTNAFEAAYKENYALWMGPYKVSIGIKPTEGLMVDIFS DIRPYGNHTGNSAPSVEADN					
	a406	IKPKTNAFEAAYKENYALWMGPYKVSIGIKPTEGLMVDIFS DIRPYGNHTGNSAPSVEADN					
		250	260	270	280	290	300
30	m406.pep	SHEGYGYSDEVVRQHRQGPX					
	a406	SHEGYGYSDEAVRRHRQGPX					
35		310	320				
	m406.pep	SHEGYGYSDEVVRQHRQGPX					
	a406	SHEGYGYSDEAVRRHRQGPX					
		310	320				

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1040>:

	m726.seq	1	ATGACCATCT	ATTTCAAAA	CGGCTTTTAC	GACGACACAT	TGGGCGGCAT
		51	CCCCGAAGGC	GCGGTTGCCG	TCCGCGCCGA	AGAATACGCC	GCCCTTTTGG
45		101	CAGGACAGGC	GCAGGGCGGG	CAGATTGCCG	CAGATTCCGA	CGGCCGCCCC
		151	GTTTTAACCC	CGCCGCGCCC	GTCCGATTAC	CACGAATGGG	ACGGCAAAAA
		201	ATGGAAAATC	AGCAAAGCCG	CCGCCGCCGC	CCGTTTCGCC	AAACAAAAAA
		251	CCGCCTTGGC	ATTCCGCCTC	GCGGAAAAGG	CGGACGAACT	CAAAAACAGC
		301	CTCTTGGCGG	GCTATCCCCA	AGTGGAAATC	GACAGCTTTT	ACAGGCAGGA
50		351	AAAAGAAGCC	CTCGCGCGGC	AGGCGGACAA	CAACGCCCCG	ACCCCGATGC
		401	TGGCGCAAAT	CGCCGCCGCA	AGGGCGGTGG	AATTGGACGT	TTTGATTGAA
		451	AAAGTTATCG	AAAAATCCGC	CCGCCTGGCT	GTTGCCGCCG	GCGCGATTAT
		501	CGGAAAGCGT	CAGCAGCTCG	AAGACAAATT	GAACACCATC	GAAACCGCGC
55		551	CCGATTGGA	CGCGCTGGAA	AAGGAAATCG	AAGAATGGAC	GCTAAACATC
		601	GGCTGA				

This corresponds to the amino acid sequence <SEQ ID 1041; ORF 726>:

60	m726.pep	1	MTIYFKNGFY	DDTLGGIPEG	AVAVRAEEYA	ALLAGQAQGG	QIAADSDGRP
		51	VLTTPRPSDY	HEWDGKKWKI	SKAAAAARFA	KQKTALAFRL	AEKADELKNS

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101 LLAGYPQVEI DSFYRQEKEA LARQADNNAP TPMLAQIAAA RGVELDLVIE
 151 KVIKESARLA VAAGAIIGKR QQLEDKLNLI ETAPGLDALE KEIEEWTLNI
 201 G*

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1042>:

10 m907-2.seq
 1 ATGAGAAAAC CGACCGATAC CCTACCGTT AATCTGCAAC GCCGCCGCCT
 51 GTTGTGTGCC GCCGGTGGCT TGTGTCTCAG TCCTCTGGCG CACGCCGGCG
 101 CGCAACGTGA GGAAACGCTT GCCGACGATG TGGCTTCCGT GATGAGGAGT
 151 TCTGTGCGCA GCGTCAATCC GCCGAGGCTG GTGTTTGACA ATCCGAAAGA
 201 GGGCGAGCGT TGGTTGTCTG CCATGTCGGC ACGTTTGGA AGGTTTCGTCC
 15 CCGAGGAGGA GGAGCGGCGC AGGCTGCTGG TCAATATCCA GTACGAAAGC
 301 AGCCGGGCGG GTTGGATAC GCAGATTGTG TTGGGGCTGA TTGAGGTGGA
 351 AAGCGCGTTC CGCCAGTATG CAATCAGCGG TGTGGGCGCG CGCGGCCTGA
 401 TGCAGGTAT GCGGTTTGG AAAAATAACA TCGGCAAACC GGCGCACAAAC
 451 CTGTTTCGACA TCCGCACCAA CCTGCGTTAC GGCTGTACCA TCCTGCGCCA
 20 501 TTACCGGAAT CTTGAAAAAG GCAACATCGT CCGCGGCGTT GCCCGCTTTA
 551 ACGGCAGCTT GGGCAGCAAT AAATATCCGA ACGCCGTTTT GGGCGCGTGG
 601 CGCAACCGCT GGCAGTGGCG TTGA

25

This corresponds to the amino acid sequence <SEQ ID 1043; ORF 907-2>:

25 m907-2.pep
 1 MRKPTDTLPV NLQRRRLCA AGALLLSPLA HAGAQREETL ADDVASVMRS
 51 SVGSVNPRL VFDNPKGER WLSAMSARLA RFVPEEEERR RLLVNIQYES
 101 SRAGLDTQIV LGLIEVESAF RQYAISGVA RGLMQVMPFW KNYIGKPAHN
 30 151 LFDIRTNLRY GCTILRHYRN LEKGNIVRAL ARFNGSLGSN KYPNAVLGAW
 201 RNRWQWR*

35

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1044>:

35 m953.seq
 1 ATGAAAAAAA TCATCTTCGC CGCACTCGCA GCCGCCGCCA TCAGTACTGC
 51 CTCCGCCGCC ACCTACAAAG TGGACGAATA TCAGCCCAAC GCCCGTTTCG
 101 CCATCGACCA TTTCAACACC AGCACCAACG TCGGCGGTTT TTACGGTCTG
 40 151 ACCGGTTCCG TCGAGTTGCA CCAAGCAAAA CGCGACGGTA AAATCGACAT
 201 CACCATCCCC ATTGCCAACC TGCAAAAGCGG TTCGCAACAC TTTACCGACC
 251 ACCTGAAATC AGCCGACATC TTCGATGCCG CCCAATATCC GGACATCCGC
 301 TTTGTTTCCA CCAAATTCAA CTTCAACGGC AAAAACTGG TTTCCGTTGA
 351 CGGCAACCTG ACCATGCACG GCAAAACCGC CCCCCTCAA CTCAAAGCCG
 45 401 AAAAATTCAA CTGCTACCAA AGCCCCATGG AGAAAACCGA AGTTTGTGGC
 451 GGCGACTTCA GCACCACCAT CGACCGCACC AAATGGGGCA TGGACTACCT
 501 CGTTAACGTT GGTATGACCA AAAGCGTCCG CATCGACATC CAAATCGAGG
 551 CAGCCAAACA ATAA

50

This corresponds to the amino acid sequence <SEQ ID 1045; ORF 953>:

55 m953.pep
 1 MKKIIFAALA AAAISTASAA TYKVDEYHAN ARFAIDHENT STNVGGFYGL
 51 TGSVEFDQAK RDGKIDITIP IANLQSGSQH FTDHLKSADI FDAAQYPPDIR
 101 FVSTKFNFG KKLVSVDGNL TMHGKTAPVK LKAEKFNCYQ SPMEKTEVCG
 151 GDFSTTIDRT KWGMDYLVNV GMTKSVRIDI QIEAAKQ*

60

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1046>:

orf1-1.seq

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1 ATGAAAACAA CCGACAAACG GACAACCGAA ACACACCGCA AAGCCCCGAA
51 AACCGGCCGC ATCCGCTTCT CCGCTGCTTA CTTAGCCATA TGCCTGTCGT
101 TCGGCATTCT TCCCCAAGCC TGGGCGGGAC ACACCTATTT CGGCATCAAC
151 TACCAATACT ATCGCGACTT TGCCGAAAAT AAAGGCAAGT TTGCAGTCGG
5 GCGCAAGAT ATTGAGGTTT ACAACAAAA AGGGGAGTTG GTCGGCAAAAT
251 CAATGACAAA AGCCCCGATG ATTGATTTTT CTGTGGTCTC GCGTAACGGC
301 GTGGCGGCAT TGGTGGGCGA TCAATATATT GTGAGCGTGG CACATAACGG
351 CGGCTATAAC AACGTTGATT TTGGTGCAGA AGGAAGAAAT CCCGATCAAC
401 ATCGTTTTAC TTATAAAATT GTGAAACGGA ATAATTATAA AGCAGGGACT
10 451 AAAGGCCATC CTTATGGCGG CGATTATCAT ATGCCGCGTT TGCATAAATT
501 TGTCAAGAT GCAGAACCTG TTGAAATGAC CAGTTATATG GATGGGCGGA
551 AATATATCGA TCAAAATAAT TACCCTGACC GTGTTCTGAT TGGGGCAGGC
601 AGGCAATATT GGCATCTGA TGAAGATGAG CCCAATAACC GCGAAAGTTC
651 ATATCATATT GCAAGTGCGT ATTCTTGGCT CGTTGGTGGC AATACCTTTG
15 701 CACAAAATGG ATCAGGTGGT GGCACAGTCA ACTTAGGTAG TGA AAAAATT
751 AACATAGCC CATATGGTTT TTTACCAACA GGAGGCTCAT TTGGCGACAG
801 TGGCTCACCA ATGTTTATCT ATGATGCCCA AAAGCAAAAG TGGTTAATTA
851 ATGGGGTATT GCAACCGGC AACCCCTATA TAGGAAAAAG CAATGGCTTC
901 CAGCTGGTTC GTAAAGATTG GTTCTATGAT GAAATCTTTG CTGGAGATAC
20 951 CCATTCACTA TTCTACGAAC CACGTCAAAA TGGGAAATAC TCTTTTAACG
1001 ACGATAATAA TGGCAGAGGA AAAATCAATG CCAACATGA ACACAATTCT
1051 CTGCCTAATA GATTAAAAAC ACGAACCGTT CAATTGTTTA ATGTTTCTTT
1101 ATCCGAGACA GCAAGAGAAC CTGTTTATCA TGCTGCAGT GGTGTCAACA
1151 GTTATCGACC CAGACTGAAT AATGGAGAAA ATATTTCTCT TATTGACGAA
25 1201 GGAAAAGGCG AATTGATACT TACCAGCAAC ATCAATCAAG GTGCTGGAGG
1251 ATTATATTTT CAAGGAGATT TTACGGTCTC GCCTGAAAAT AACGAACTT
1301 GGCAAGGCGC GGGCGTTCAT ATCAGTGAAG ACAGTACCGT TACTTGGA
1351 GTAAACGGCG TGGCAAAACGA CCGCCTGTCC AAAATCGGCA AAGGCACGCT
1401 GCACGTTCAA GCCAAAGGGG AAAACCAAGG CTCGATCAGC GTGGGCGACG
30 1451 GTACAGTCAT TTTGGATCAG CAGGCAGACG ATAAAGGCAA AAAACAAGCC
1501 TTTAGTGAAT TCGGCTTGGT CAGCGGCAGG GGTACGGTGC AACTGAATGC
1551 CGATAATCAG TTCAACCCCG ACAAACTCTA TTTCCGCTTT CGCGGCGGAC
1601 GTTTGGATTT AAACGGGCAT TCGCTTTCGT TCCACCGTAT TCAAAATACC
35 1651 GATGAAGGGG CGATGATTGT CAACACAAT CAAGACAAAG AATCCACCGT
1701 TACCATTACA GGCAATAAAG ATATTGCTAC AACCGGCAAT AACAAACGCT
1751 TGGATAGCAA AAAAGAAATT GCCTACAACG GTTGGTTTGG CGAGAAAGAT
1801 ACGACCAAAA CGAACGGCG GCTCAACCTT GTTTACCAGC CCGCGCAGA
1851 AGACCGCACC CTGCTGCTTT CCGGCGGAAC AAATTAAAC GGCAACATCA
40 1901 CGCAACAACA CGGCAAACTG TTTTTCAGCG GCAGACCAAC ACCGCACGCC
1951 TACAATCATT TAAACGACCA TTGGTCGCAA AAAGAGGGCA TTCCTCGCGG
2001 GGAATATCGT TGGGACAACG ACTGGATCAA CCGCACATTT AAAGCGGAAA
2051 ACTTCCAAAT TAAAGGCGGA CAGGCGGTGG TTTCCGCAA TGTTGCCAAA
2101 GTGAAAGGCG ATTGGCATT T GAGCAATCAC GCCCAAGCAG TTTTGGTGT
2151 CGCACCAGCAT CAAAGCCACA CAATCTGTAC ACGTTCGGAC TGGACGGGTC
45 2201 TGACAAATTG TGTGAAAAA ACCATTACCG ACGATAAAGT GATTGCTTCA
2251 TTGACTAAGA CCGACATCAG CCGCAATGTC GATCTTGCCG ATCAGGCTCA
2301 TTTAAATCTC ACAGGGCTTG CCACACTCAA CGGCAATCTT AGTGCAATG
2351 GCGATACAGC TTATACAGTC AGCCACAACG CCACCCAAA CCGCAACCTT
50 2401 AGCCTCGTGG GCAATGCCCA AGCAACATTT AATCAAGCCA CATTAAACGG
2451 CAACACATCG GCTTCGGGCA ATGCTTCATT TAATCTAAGC GACCACGCCG
2501 TACAAAACGG CAGTCTGACG CTTTCCGGCA ACGCTAAGGC AAACGTAAGC
2551 CATTCGCGAC TCAACGGTAA TGTCTCCCTA GCCGATAAGG CAGTATTCCA
2601 TTTTGAAAGC AGCCGCTTTA CCGGACAAAT CAGCGGCGGC AAGGATACGG
55 2651 CATTACACTT AAAAGACAGC GAATGGACGC TGCCGTGAGG CACGGAATTA
2701 GGCAATTTAA ACCTTGACAA CGCCACCATT AACTCAATT CCGCTATCG
2751 CCACGATGCG GCAGGGGCGC AAACCGGCAG TCGACAGAT GCGCCGCGCC
2801 GCCGTTCCGC CCGTTCGCGC CGTTCCTTAT TATCCGTTAC ACCGCCAACT
2851 TCGGTAGAAT CCCGTTTCAA CAGCTGACG GTAAACGGCA AATTGAACGG
2901 TCAGGGAACA TTCCGCTTTA TGTGGAACCT CTTGGGCTAC CGCAGCGACA
60 2951 AATTGAAGCT GCGGAAAGT TCCGAAGGCA CTTACACCTT GCGGTCACAC
3001 AATACCGGCA ACGAACCTGC AAGCCTCGAA CAATTGACGG TAGTGGAAGG
3051 AAAAGACAAC AAACCGCTGT CCGAAAACCT TAATTCACC CTGCAAAACG
3101 AACACGTCGA TGCCGCGCGC TGGCGTTACC AACTCATCCG CAAAGACGGC

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5 3151. GAGTTCCGCC TGCATAATCC GGTCAAAGAA CAAGAGCTTT CCGACAAACT
 3201. CGGCAAGGCA GAAGCCAAA AACAGGCGGA AAAAGACAAC GCGCAAAGCC
 3251. TTGACGCGCT GATTGCGGCC GGGCGCGATG CCGTCGAAA GACAGAAAGC
 3301. GTTGCCGAAC CGGCCCGGCA GGCAGGCGGG GAAATGTCTG GCATTATGCA
 3351. GGCGGAGGAA GAGAAAAAAC GGGTGCAGGC GGATAAAGAC ACCGCCTTGG
 3401. CGAAACAGCG CGAAGCGGAA ACCCGGCCGG CTACCACGCG CTTCCCCCGC
 3451. GCCCGCGCGG CCCGCGGGA TTTGCCGCAA CTGCAACCCC AACCGCAGCC
 3501. CCAACCGCAG CGCGACCTGA TCAGCCGTTA TGCCAATAGC GGTTTGAGTG
 10 3551. AATTTTCCGC CACGCTCAAC AGCGTTTTCTG CCGTACAGGA CGAATTAGAC
 3601. CGCGTATTTC CCGAAGACCG CCGCAACGCC GTTTGGACAA GCGGCATCCG
 3651. GGACACCAA CACTACCGTT CGCAAGATT CCGCGCCTAC CGCCAACAAA
 3701. CCGACCTGCG CCAAATCGGT ATGCAGAAA ACCTCGGCAG CGGGCGCGTC
 3751. GGCATCCTGT TTTTCGCACAA CCGGACCGAA AACACCTTCG ACGACGGCAT
 3801. CGGCAACTCG GCACGCTTG CCCACGGCGC CGTTTTCTGG CAATACGGCA
 15 3851. TCGACAGGTT CTACATCGGC ATCAGCGCGG GCGCGGGTT TAGCAGCGGC
 3901. AGCCTTTCAG ACGGCATCGG AGGCAAAATC CGCCGCGCGG TGCTGCATTA
 3951. CGGCATTTCAG GCACGATACC GCGCCGGTTT CCGGGGATTG GGCATCGAAC
 4001. CGCACATCGG CGCAACGCGC TATTTCTGTC AAAAAGCGGA TTACCGCTAC
 4051. GAAAACGTC ATATCGCCAC CCCCAGCCTT GCATTCAACC GCTACCGCGC
 20 4101. GGGCATTAA GAGATTATT CATTCAAACC GCGCAACAC ATTTCCATCA
 4151. CGCCTTATTT GAGCCTGTCC TATACCGATG CCGCTTCGGG CAAAGTCCGA
 4201. ACACGCGTCA ATACCGCCGT ATTGGCTCAG GATTTCCGCA AAACCCGCGC
 4251. TCGGAATGG GGCCTAAACG CCGAATCAA AGGTTTCACG CTGTCCCTCC
 4301. ACGTCCCGC CGCCAAGGC CCGCAACTGG AAGCGCAACA CAGCGCGGGC
 25 4351. ATCAAATTAG GCTACCGCTG GTAA

This corresponds to the amino acid sequence <SEQ ID 1047; ORF orf1-1>:

30 orf1-1.pap
 1 MKTTDKRTE THRKAPKTGR IRFSPAYLAI CLSFGILPQA WAGHTYFGIN
 51 YQYYRDFAEN KGKFAVGAKE IEVYNKKGEL VGKSMTKAPM IDFSVSVSRNG
 101 VAALVGQYI VSAHNGGYN NVDFGAEGRN PDQHRFTYKI VKRNNYKAGT
 151 KGHFYGGDYH MFLHKKFVTD AEPVENTSYM DGRKYIDQNN YPDRVRIGAG
 35 201 RQYWRSDEDE PNNRESSYHI ASAYSWLVGG NTFAQNGSGG GTVNLGSEKI
 251 KHSFYGLPT GGSFGDSGSP MFIYDAQKQK WLINGVLQTG NPYIGKSNFG
 301 QLVRKDWFYD EIFAGDTHSV FYEPRQNGKY SFNDNNNGTG KINAKHEHNS
 351 LPNRLKTRTV QLFNVLSSET AREPVYHAAG GVNSYRPRLN NGENISFIDE
 401 KGELILTSN INQAGGLYF QGDFTVSPEN NETWQAGVH ISEDSTVTWK
 40 451 VNGVANDRLS KIGKGLHVQ AKGENQGSIS VGDGTVILDQ QADDKGGKQA
 501 FSEIGLVSGR GTVQLNADNQ FNPDKLYFGF RGGRLDLNGH SLSFHRQNT
 551 DEGAMIVNHN QDKESTVTIT GNKDIATTGN NNSLDSKKEI AYNGWFGEKD
 601 TTKTNGRLNL VYQPAEDRT LLLSGGTNLN GNITQTNGKL FFSGRPTPHA
 651 YNHLNDHWSQ KEGIPRGEIV WDNDWINRTF KAENFQIKGG QAVVSRNVAK
 45 701 VKGDWHLNHN AQAVFVAPH QSHTICTRSD WTGLTNCVEK TITDDKVIAS
 751 LTKTDISGNV DLADHAHLNL TGLATLNGNL SANGDTRYTV SHNATQNGNL
 801 SLVGNAQATF NQATLNGNTS ASGNASFNLS DHAVQNGSLT LSGNAKANVS
 851 HSALNGNVSL ADKAVFHFES SRFTGQISGG KDTALHLKDS EWTLPSTEL
 901 GNLNLNATI TLNSAYRHDA AGAQTGSATD APRRRSRRSR RSLLSVTPPT
 50 951 SVESRNTLT VNGKLNQGT FRFMSELFY RSDKLKLAES SEGTYTLAVN
 1001 NTGNEPASLE QLTVEGKDN KPLSENLFY LQNEHVDAGA WRYQLIRKDG
 1051 EFRHLNPKVE QELSDKLGKA EAKKQAEKDN AQSLDALIAA GRDAVEKTES
 1101 VAEPARQAGG ENVGIMQAE EKKRVQADKD TALAKQREAE TRPATTAFPR
 1151 ARRARRDLPO LQPPQPPQ RDLSRYANS GLSEFSATLN SVFAVQDELD
 55 1201 RVFAEDRNA VWTSGIRDTK HYRSQDFRAY RQOTDLRQIG MQKNLGSGRV
 1251 GILFSHNRT EFTDDGIGNS ARLAHGAVFG QYGIDRFYIG ISAGAGFSSG
 1301 SLSDGIGGKI RRRVLHYGIQ ARYRAGFGGF GIEPHIGATR YFVQADYRY
 1351 ENVNIATPGL AFNRYRAGIK ADYSFKPAQH ISITPYLSLS YTDASGKVR
 1401 TRVNTAVLAQ DFGKTRSAEW GVNAEIKGFT LSLHAAAAGK PQLEAQHSAG
 60 1451 IKLGYRW*

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1048>:

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orf46-2.seq
1   TTGGGCATTT CCCGCAAAAT ATCCCTTATT CTGTCCATAC TGGCAGTGTG
5   51   CCTGCCGATG CATGCACACG CCTCAGATTT GGCAAACGAT TCTTTTATCC
    101  GGCAGGTTCT CGACCGTCAG CATTTCGAAC CCGACGGGAA ATACCACCTA
    151  TTCGGCAGCA GGGGGGAACT TGCCGAGCGC AGCGGCCATA TCGGATTGGG
    201  AAAAATACAA AGCCATCAGT TGGGCAACCT GATGATTCAA CAGGCGGCCA
    251  TTAAAGGAAA TATCGGCTAC ATTGTCCGCT TTTCCGATCA CGGGCAGGAA
10   301  GTCCATTCCC CCTTCGACAA CCATGCCTCA CATTCCGATT CTGATGAAGC
    351  CCGTACTCCC GTTGACGGAT TTAGCCTTTA CCGCATCCAT TGGGACGGAT
    401  ACGAACACCA TCCCGCCGAC GGCTATGACG GGCCACAGGG CGGCGGCTAT
    451  CCCGCTCCCA AAGGCGCGAG GGATATATAC AGCTACGACA TAAAAGGCGT
    501  TGCCCAAAAT ATCCGCTCA ACCTGACCGA CAACCGCAGC ACCGGACAAC
15   551  GGCTTGCCGA CCGTTTCCAC AATGCCGTA GTATGCTGAC GCAAGGAGTA
    601  GCGCAGCGAT TCAAACGCGC CACCCGATAC AGCCCCGAGC TGGACAGATC
    651  GGGCAATGCC GCCGAAGCCT TCAACGGCAC TGCAGATATC GTTAAAAACA
    701  TCATCGGCGC GGCAGGAGAA ATTGTCCGCG CAGGCGATGC CGTGCAGGGC
    751  ATAAGCGAAG GCTCAACAT TGCTGTCATG CACGGCTTGG GTCTGCTTTC
20   801  CACGAAAAC AAGATGGCGC GCATCAACGA TTTGGCAGAT ATGGCGCAAC
    851  TCAAAGACTA TGCCGCAGCA GCCATCCGCG ATTGGGCAGT CCAAACCCCC
    901  AATGCCGCAC AAGGCATAGA AGCCGTCAGC AATATCTTTA TGGCAGCCAT
    951  CCCCATCAAA GGGATTGGAG CTGTTCCGGG AAAATACGGC TTGGGCGGCA
100  1001 TCACGGCACA TCCTATCAAG CGGTCGCAGA TGGGCGCGAT CGCATTGCCG
25   1051 AAAGGGAAAT CCGCCGTCAG CGACAATTTT GCGGATGCGG CATAAGCCAA
    1101 ATACCCGTCC CCTTACCATT CCCGAAATAT CCGTTCAAAC TTGGAGCAGC
    1151 GTTACGGCAA AGAAAACATC ACCTCCTCAA CCGTGCCGCC GTCAAACGGC
    1201 AAAAATGTCA AACTGGCAGA CCAACGCCAC CCGAAGACAG GCGTACCGTT
    1251 TGACGGTAAA GGGTTTCCGA ATTTTGAGAA GCACGTGAAA TATGATACGA
30   1301 AGCTCGATAT TCAAGAATTA TCGGGGGGCG GTATACCTAA GGCTAAGCCT
    1351 GTGTTTGATG CGAAACCGAG ATGGGAGGTT GATAGGAAGC TTAATAAATT
    1401 GACAACTCGT GAGCAGGTGG AGAAAAATGT TCAGGAAATA AGGAACGGTA
    1451 ATATAAACAG TAACTTTAGC CAACATGCTC AACTAGAGAG GGAATTAAT
    1501 AAATAAAAT CTGCCGATGA AATTAATTTT GCAGATGGAA TGGGAAAATT
35   1551 TACCGATAGC ATGAATGACA AGGCTTTTAG TAGGCTTGTTG AAATCAGTTA
    1601 AAGAGAATGG CTTACAAAT CCAGTTGTGG AGTACGTTGA AATAAATGGA
    1651 AAAGCATATA TCGTAAGAGG AAATAATRGG GTTTTGTCTG CAGAATACCT
    1701 TGGCAGGATA CATGAATTAA AATTTAAAAA AGTTGACTTT CCTGTTCTTA
    1751 ATACTAGTTG GAAAAATCCT ACTGATGTCT TGAATGAATC AGGTAATGTT
40   1801 AAGAGACCTC GTTATAGGAG TAAATAA

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This corresponds to the amino acid sequence <SEQ ID 1049; ORF orf46-2>:

```

orf46-2.pep
1   LGISRKISLI LSILAVCLPM HAHASDLAND SFIRQVLDRO HFEPDGKYHL
51  FGSRGELAER SGHIGLGKIQ SHQLGNLMIQ QAAIKGNIGY IVRFSDHGHE
101 VHSPPDNHAS HSDSDEAGSP VDGFSLYRIH WDGYEHHPAD GYDGPQGGGY
50  151  PAPKGARDIY SYDIKGVAQN IRLNLTNRS TGQRLADRFH NAGSMLTQGV
    201  GDGFKRATRY SPELDRSGNA AEAFTGTADI VKNIIGAAGE IVGAGDAVQG
    251  ISEGSNIAMV HGLGLLSTEN KMARINDLAD MAQLKDYAAA AIRDWAVQNP
    301  NAAQGIEAVS NIFMAAIPK GIGAVRGKYG LGGITAHPIK RSQMGAIALP
    351  KGKSAVSDNF ADAAYAKYPS PYHSRNIRSN LEQRYKENI TSSTVPPSNG
55  401  KNVKLADQRH PKTGVPFDGK GFPNFEKHVK YDTKLDIQL SGGGIPKAKP
    451  VFDAPRWEV DRKLNKLTR EQVEKNVQEI RGNINSNFS QHAQLEREIN
    501  KLKSADEINF ADGMGKFTDS MNDKAFSRLV KSVKENGFTN PVVEYVEING
    551  KAYIVRGNNR VFAAEYLGR I HELKFKKVDF PVPNTSWKNP TDVLNESGNV
60  601  KRPRYRSK*

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Using the above-described procedures, the following oligonucleotide primers were employed in the polymerase chain reaction (PCR) assay in order to clone the ORFs as indicated:

5 Oligonucleotides used for PCR

Table 1

ORF	Primer	Sequence	Restriction sites
279	Forward	CGCGGATCCCATATG-TTGCCTGCAATCACGATT <SEQ ID 1050>	BamHI-NdeI
	Reverse	CCCGCTCGAG-TTAGAAGCGGGCGGCAA <SEQ ID 1051>	XhoI
519	Forward	CGCGGATCCCATATG-TTCAAATCCTTTGTCGTCA <SEQ ID 1052>	BamHI-NdeI
	Reverse	CCCGCTCGAG-TTTGGCGGTTTTGCTGC <SEQ ID 1053>	XhoI
576	Forward	CGCGGATCCCATATG-GCGGCCCCCGCATCT <SEQ ID 1054>	BamHI-NdeI
	Reverse	CCCGCTCGAG-ATTTACTTTTTGATGTCGAC <SEQ ID 1055>	XhoI
919	Forward	CGCGGATCCCATATG-TGCCAAAGCAAGAGCATC <SEQ ID 1056>	BamHI-NdeI
	Reverse	CCCGCTCGAG-CGGGCGGTATTCGGG <SEQ ID 1057>	XhoI
121	Forward	CGCGGATCCCATATG-GAAACACAGCTTTACAT <SEQ ID 1058>	BamHI-NdeI
	Reverse	CCCGCTCGAG-ATAATAATATCCCGCGCCC <SEQ ID 1059>	XhoI
128	Forward	CGCGGATCCCATATG-ACTGACAAGGCACT <SEQ ID 1060>	BamHI-NdeI
	Reverse	CCCGCTCGAG-GACCGCGTTGTCGAAA <SEQ ID 1061>	XhoI
206	Forward	CGCGGATCCCATATG-AAACACCGCCAACCGA <SEQ ID 1062>	BamHI-NdeI
	Reverse	CCCGCTCGAG-TTCTGTAAAAAAGTATGTGC <SEQ ID 1063>	XhoI
287	Forward	CCGGAATTCTAGCTAGC-CTTTCAGCCTGCGGG <SEQ ID 1064>	EcoRI-NheI
	Reverse	CCCGCTCGAG-ATCCTGCTCTTTTTTGCC <SEQ ID 1065>	XhoI
406	Forward	CGCGGATCCCATATG-TGCGGGACACTGACAG <SEQ ID 1066>	BamHI-NdeI

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	Reverse	CCCGCTCGAG-AGGTTGTCCTTGTCTATG <SEQ ID 1067>	XhoI
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EXAMPLE 2

Expression of ORF 919

5 The primer described in Table 1 for ORF 919 was used to locate and clone ORF 919. The predicted gene 919 was cloned in pET vector and expressed in *E. coli*. The product of protein expression and purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 919-His fusion protein purification. Mice were immunized with the purified 919-His and sera were used for Western blot (panel B), FACS analysis (panel C), bactericidal

10 assay (panel D), and ELISA assay (panel E). Symbols: M1, molecular weight marker; PP, purified protein, TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B). These experiments confirm that 919 is a surface-exposed protein and that it is a useful immunogen. The hydrophilicity

15 plots, antigenic index, and amphipatic regions of ORF 919 are provided in Figure 10. The AMPHI program is used to predict putative T-cell epitopes (Gao et al 1989, *J. Immunol* 143:3007; Roberts et al. 1996, *AIDS Res Human Retroviruses* 12:593; Quakyi et al. 1992, *Scand J Immunol Suppl* 11:9). The nucleic acid sequence of ORF 919 and the amino acid sequence encoded thereby is provided in Example 1.

20

EXAMPLE 3

Expression of ORF 279

25 The primer described in Table 1 for ORF 279 was used to locate and clone ORF 279. The predicted gene 279 was cloned in pGex vector and expressed in *E. coli*. The product of protein expression and purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 279-GST purification. Mice were immunized with the purified 279-GST and sera were used for Western blot analysis (panel B), FACS analysis (panel C), bactericidal assay (panel D), and ELISA assay (panel E). Symbols: M1, molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle

30 preparation. Arrows indicate the position of the main recombinant protein product (A) and

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the *N. meningitidis* immunoreactive band (B). These experiments confirm that 279 is a surface-exposed protein and that it is a useful immunogen. The hydrophilicity plots, antigenic index, and amphipatic regions of ORF 279 are provided in Figure 11. The AMPHI program is used to predict putative T-cell epitopes (Gao et al 1989, *J. Immunol* 143:3007; Roberts et al. 1996, *AIDS Res Human Retroviruses* 12:593; Quakyi et al. 1992, *Scand J Immunol Suppl* 11:9). The nucleic acid sequence of ORF 279 and the amino acid sequence encoded thereby is provided in Example 1.

EXAMPLE 4

Expression of ORF 576

The primer described in Table 1 for ORF 576 was used to locate and clone ORF 576. The predicted gene 576 was cloned in pGex vector and expressed in *E. coli*. The product of protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 576-GST fusion protein purification. Mice were immunized with the purified 576-GST and sera were used for Western blot (panel B), FACS analysis (panel C), bactericidal assay (panel D), and ELISA assay (panel E). Symbols: M1, molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B).. These experiments confirm that ORF 576 is a surface-exposed protein and that it is a useful immunogen. The hydrophilicity plots, antigenic index, and amphipatic regions of ORF 576 are provided in Figure 12. The AMPHI program is used to predict putative T-cell epitopes (Gao et al 1989, *J. Immunol* 143:3007; Roberts et al. 1996, *AIDS Res Human Retroviruses* 12:593; Quakyi et al. 1992, *Scand J Immunol Suppl* 11:9). The nucleic acid sequence of ORF 576 and the amino acid sequence encoded thereby is provided in Example 1.

EXAMPLE 5

Expression of ORF 519

The primer described in Table 1 for ORF 519 was used to locate and clone ORF 519. The predicted gene 519 was cloned in pET vector and expressed in *E. coli*. The product of

- 118 -

protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 519-His fusion protein purification. Mice were immunized with the purified 519-His and sera were used for Western blot (panel B), FACS analysis (panel C), bactericidal assay (panel D), and ELISA assay (panel E). Symbols: M1, molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B). These experiments confirm that 519 is a surface-exposed protein and that it is a useful immunogen. The hydrophilicity plots, antigenic index, and amphipathic regions of ORF 519 are provided in Figure 13. The AMPHI program is used to predict putative T-cell epitopes (Gao et al 1989, *J. Immunol* 143:3007; Roberts et al. 1996, *AIDS Res Human Retroviruses* 12:593; Quakyi et al. 1992, *Scand J Immunol Suppl* 11:9). The nucleic acid sequence of ORF 519 and the amino acid sequence encoded thereby is provided in Example 1.

EXAMPLE 6

Expression of ORF 121

The primer described in Table 1 for ORF 121 was used to locate and clone ORF 121. The predicted gene *121* was cloned in pET vector and expressed in *E. coli*. The product of protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 121-His fusion protein purification. Mice were immunized with the purified 121-His and sera were used for Western blot analysis (panel B), FACS analysis (panel C), bactericidal assay (panel D), and ELISA assay (panel E). Results show that 121 is a surface-exposed protein. Symbols: M1, molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B). These experiments confirm that 121 is a surface-exposed protein and that it is a useful immunogen. The hydrophilicity plots, antigenic index, and amphipathic regions of ORF 121 are provided in Figure 14. The AMPHI program is used to predict putative T-cell epitopes (Gao et al 1989, *J. Immunol* 143:3007; Roberts et al. 1996, *AIDS Res Human Retroviruses* 12:593; Quakyi et al. 1992, *Scand J Immunol Suppl* 11:9). The nucleic acid sequence of ORF 121 and the amino acid sequence encoded thereby is provided in Example 1.

EXAMPLE 7

Expression of ORF 128

The primer described in Table 1 for ORF 128 was used to locate and clone ORF 128.

5 The predicted gene 128 was cloned in pET vector and expressed in *E. coli*. The product of protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 128-His purification. Mice were immunized with the purified 128-His and sera were used for Western blot analysis (panel B), FACS analysis (panel C), bactericidal assay (panel D) and ELISA assay (panel E). Results show that 128 is a surface-exposed protein. Symbols: M1,
10 molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B). These experiments confirm that 128 is a surface-exposed protein and that it is a useful immunogen. The hydrophilicity plots, antigenic index, and amphipathic regions of ORF 128 are provided in
15 Figure 15. The AMPHI program is used to predict putative T-cell epitopes (Gao et al 1989, *J. Immunol* 143:3007; Roberts et al. 1996, *AIDS Res Human Retroviruses* 12:593; Quakyi et al. 1992, *Scand J Immunol Suppl* 11:9). The nucleic acid sequence of ORF 128 and the amino acid sequence encoded thereby is provided in Example 1.

20

EXAMPLE 8

Expression of ORF 206

The primer described in Table 1 for ORF 206 was used to locate and clone ORF 206.

The predicted gene 206 was cloned in pET vector and expressed in *E. coli*. The product of protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 206-
25 His purification. Mice were immunized with the purified 206-His and sera were used for Western blot analysis (panel B). It is worthnoting that the immunoreactive band in protein extracts from meningococcus is 38 kDa instead of 17 kDa (panel A). To gain information on the nature of this antibody staining we expressed ORF 206 in *E. coli* without the His-tag and including the predicted leader peptide. Western blot analysis on total protein extracts from *E.*
30 *coli* expressing this native form of the 206 protein showed a recative band at a position of 38 kDa, as observed in meningococcus. We conclude that the 38 kDa band in panel B) is

- 120 -

specific and that anti-206 antibodies, likely recognize a multimeric protein complex. In panel C is shown the FACS analysis, in panel D the bactericidal assay, and in panel E) the ELISA assay. Results show that 206 is a surface-exposed protein. Symbols: M1, molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B). These experiments confirm that 206 is a surface-exposed protein and that it is a useful immunogen. The hydrophilicity plots, antigenic index, and amphipatic regions of ORF 519 are provided in Figure 16. The AMPHI program is used to predict putative T-cell epitopes (Gao et al 1989, *J. Immunol* 143:3007; Roberts et al. 1996, *AIDS Res Human Retroviruses* 12:593; Quakyi et al. 1992, *Scand J Immunol Suppl* 11:9). The nucleic acid sequence of ORF 206 and the amino acid sequence encoded thereby is provided in Example 1.

EXAMPLE 9

Expression of ORF 287

The primer described in Table 1 for ORF 287 was used to locate and clone ORF 287. The predicted gene 287 was cloned in pGex vector and expressed in *E. coli*. The product of protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 287-GST fusion protein purification. Mice were immunized with the purified 287-GST and sera were used for FACS analysis (panel B), bactericidal assay (panel C), and ELISA assay (panel D). Results show that 287 is a surface-exposed protein. Symbols: M1, molecular weight marker. Arrow indicates the position of the main recombinant protein product (A). These experiments confirm that 287 is a surface-exposed protein and that it is a useful immunogen. The hydrophilicity plots, antigenic index, and amphipatic regions of ORF 287 are provided in Figure 17. The AMPHI program is used to predict putative T-cell epitopes (Gao et al 1989, *J. Immunol* 143:3007; Roberts et al. 1996, *AIDS Res Human Retroviruses* 12:593; Quakyi et al. 1992, *Scand J Immunol Suppl* 11:9). The nucleic acid sequence of ORF 287 and the amino acid sequence encoded thereby is provided in Example 1.

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EXAMPLE 10

Expression of ORF 406

The primer described in Table 1 for ORF 406 was used to locate and clone ORF 406. The predicted gene 406 was cloned in pET vector and expressed in *E. coli*. The product of protein purification was analyzed by SDS-PAGE. In panel A) is shown the analysis of 406-His fusion protein purification. Mice were immunized with the purified 406-His and sera were used for Western blot analysis (panel B), FACS analysis (panel C), bactericidal assay (panel D), and ELISA assay (panel E). Results show that 406 is a surface-exposed protein. Symbols: M1, molecular weight marker; TP, *N. meningitidis* total protein extract; OMV, *N. meningitidis* outer membrane vesicle preparation. Arrows indicate the position of the main recombinant protein product (A) and the *N. meningitidis* immunoreactive band (B). These experiments confirm that 406 is a surface-exposed protein and that it is a useful immunogen. The hydrophilicity plots, antigenic index, and amphipathic regions of ORF 406 are provided in Figure 18. The AMPHI program is used to predict putative T-cell epitopes (Gao et al 1989, *J. Immunol* 143:3007; Roberts et al. 1996, *AIDS Res Human Retroviruses* 12:593; Quakyi et al. 1992, *Scand J Immunol Suppl* 11:9). The nucleic acid sequence of ORF 406 and the amino acid sequence encoded thereby is provided in Example 1.

The foregoing examples are intended to illustrate but not to limit the invention.

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Claims

1. A method for identifying an amino acid sequence, comprising the step of searching for putative open reading frames or protein-coding sequences within one or more of *N. meningitidis* nucleotide sequences SEQ ID NOs 1-961 and 1068, or even-numbered
5 SEQ ID NOs from SEQ ID 962 to SEQ ID 1044.
2. A method according to claim 1, comprising the steps of searching a *N. meningitidis* nucleotide sequence for an initiation codon and searching the upstream
10 sequence for an in-frame termination codon.
3. A method for producing a protein, comprising the step of expressing a protein comprising an amino acid sequence identified according to any one of claims 1-2.
- 15 4. A method for identifying a protein in *N. meningitidis*, comprising the steps of producing a protein according to claim 3, producing an antibody which binds to the protein, and determining whether the antibody recognises a protein produced by *N. meningitidis*.
5. Nucleic acid comprising an open reading frame or protein-coding sequence
20 identified by a method according to any one of claims 1-2.
6. A protein obtained by the method of claim 3.
7. Nucleic acid comprising one or more of the *N. meningitidis* nucleotide
25 sequences SEQ ID NOs 1-961 and 1068, or even-numbered SEQ ID NOs from SEQ ID NO 962 to SEQ ID NO 1044.
8. Nucleic acid comprising a nucleotide sequence having greater than 50% sequence identity to a nucleotide sequence disclosed in the sequence listing SEQ ID NOs 1-
30 961 and 1068, or even-numbered SEQ ID NOs from SEQ ID 962 to SEQ ID 1044.

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9. Nucleic acid comprising a fragment of a nucleotide sequence disclosed in the sequence listing SEQ ID NOs 1-961 and 1068, or even-numbered SEQ ID NOs from SEQ ID 962 to SEQ ID 1044.

5 10. Nucleic acid according to claim 9, wherein the fragment is unique to the genome of *N. meningitidis*.

11. Nucleic acid complementary to the nucleic acid of any one of claims 7-10.

10 12. A protein comprising an amino acid sequence encoded within one or more of the *N. meningitidis* nucleotide sequences SEQ ID NOs 1-961 and 1068, or even-numbered SEQ ID NOs from SEQ ID 962 to SEQ ID 1044.

15 13. A protein comprising an amino acid sequences having greater than 50% sequence identity to an amino acid sequence encoded within one or more of the *N. meningitidis* nucleotide sequences SEQ ID NOs 1-961 and 1068, or even-numbered SEQ ID NOs from SEQ ID 962 to SEQ ID 1044.

20 14. A protein comprising a fragment of an amino acid sequence selected from the group consisting of one or more odd-numbered SEQ ID NOs 963-1037, amino acid sequences having greater than 50% identity with one or more odd-numbered SEQ ID NOs 963-1045, amino acid sequences encoded within one or more of the *N. meningitidis* nucleotide sequences SEQ ID NOs 1-961 and 1068, and amino acid sequences encoded by one or more even-numbered SEQ ID NOs from SEQ ID 962 to SEQ ID 1044.

25 15. Nucleic acid encoding a protein according to any one of claims 6-8.

30 16. A computer, a computer memory, a computer storage medium or a computer database containing the nucleotide sequence of a nucleic acid according to any one of claims 7-11.

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17. A computer, a computer memory, a computer storage medium or a computer database containing one or more of the *N. meningitidis* nucleotide sequences SEQ ID NOs 1-961.

5 18. A polyclonal or monoclonal antibody which binds to a protein according to any one of claims 12-14 or 6.

19. A nucleic acid probe comprising nucleic acid according to any one of claims 5, 7-10, or 15.

10

20. An amplification primer comprising nucleic acid according to any one of claims 5, 7-10, or 15.

15 21. A composition comprising (a) nucleic acid according to any one of claims 5, 7-10, or 15; (b) protein according to any one of claims 12-14; and/or (c) an antibody according to claim 18.

22. The use of a composition according to claim 21 as a medicament or as a diagnostic reagent.

20

23. The use of a composition according to claim 21 in the manufacture of (a) a medicament for treating or preventing infection due to Neisserial bacteria and/or (b) a diagnostic reagent for detecting the presence of Neisserial bacteria or of antibodies raised against Neisserial bacteria.

25

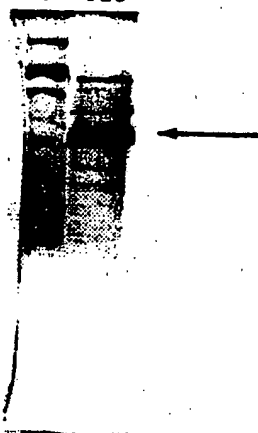
24. A method of treating a patient, comprising administering to the patient a therapeutically effective amount of a composition according to claim 21.

FIG. 1A

919 (46 kDa)

PURIFICATION

M1 919

*FIG. 1B*

919 (46 kDa)

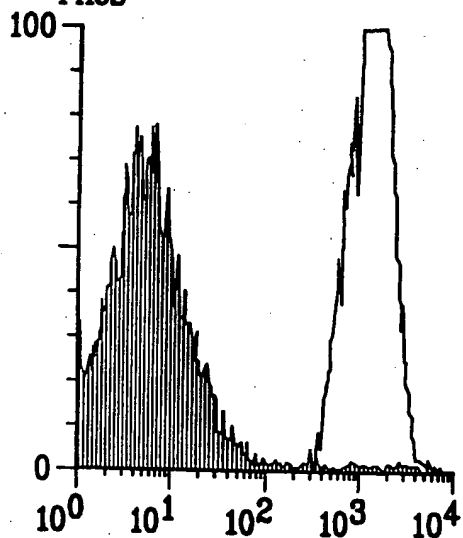
WESTERN BLOT

OMV TP PP

*FIG. 1C*

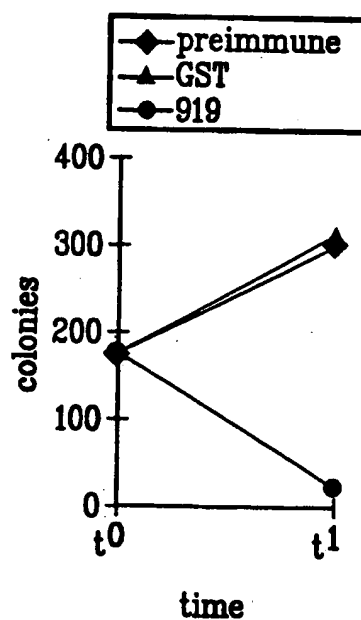
919 (46 kDa)

FACS

*FIG. 1D*

919 (46 kDa)

BACTERICIDAL ASSAY

*FIG. 1E*

919 (46 kDa)

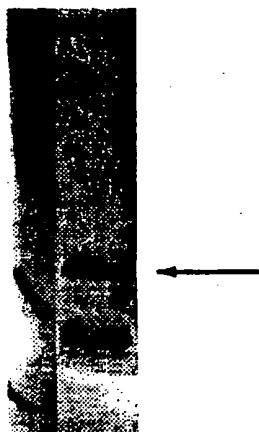
ELISA assay: positive

FIG. 2A

279 (10.5 kDa)

PURIFICATION

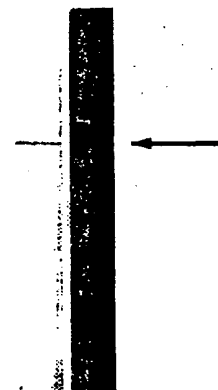
M1 279

*FIG. 2B*

279 (10.5 kDa)

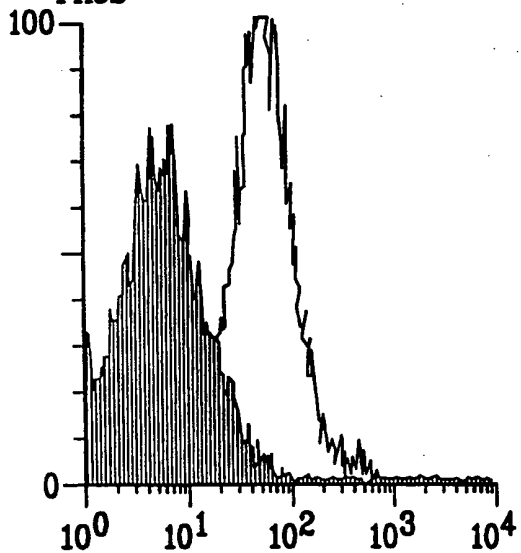
WESTERN BLOT

TP OMV

*FIG. 2C*

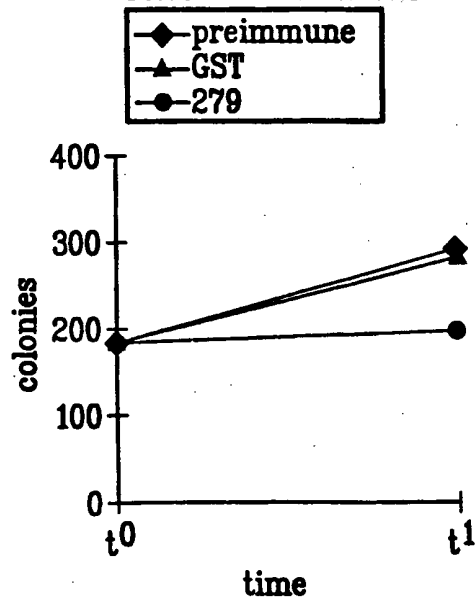
279 (10.5 kDa)

FACS

*FIG. 2D*

279 (10.5 kDa)

BACTERICIDAL ASSAY

*FIG. 2E*

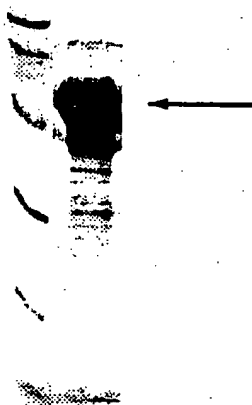
279 (10.5 kDa)

ELISA assay: positive

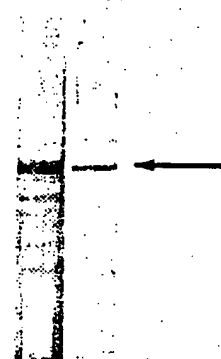
3/18

FIG. 3A

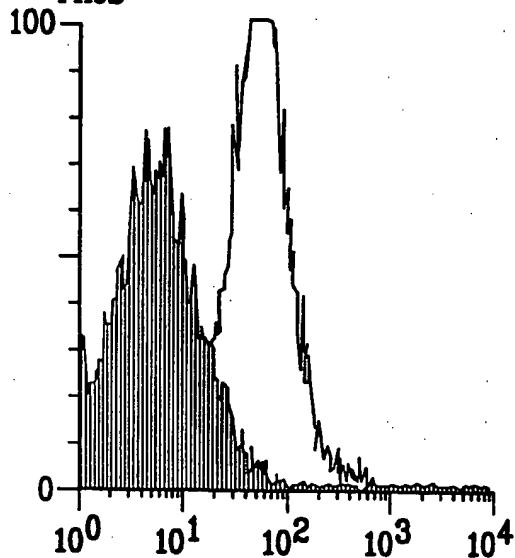
576 (27.8 kDa)
PURIFICATION
M1 576

*FIG. 3B*

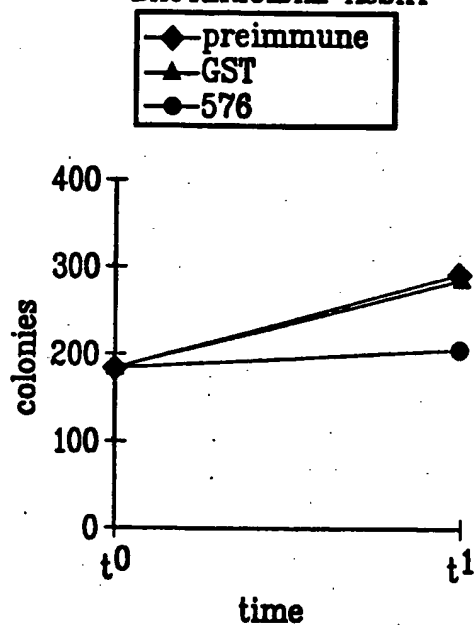
576 (27.8 kDa)
WESTERN BLOT
TP OMV

*FIG. 3C*

576 (27.8 kDa)
FACS

*FIG. 3D*

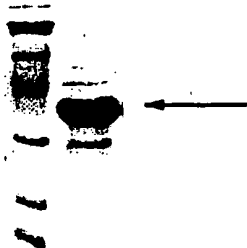
576 (27.8 kDa)
BACTERICIDAL ASSAY

*FIG. 3E*

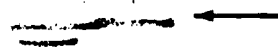
576 (27.8 kDa)
ELISA assay: positive

FIG. 4A

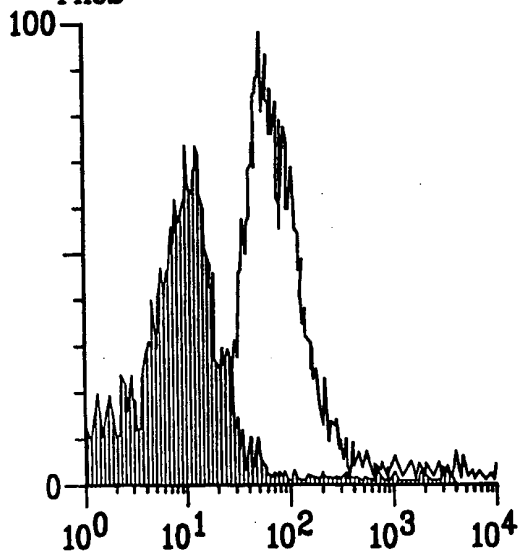
519 (33 kDa)
PURIFICATION
M1 519

*FIG. 4B*

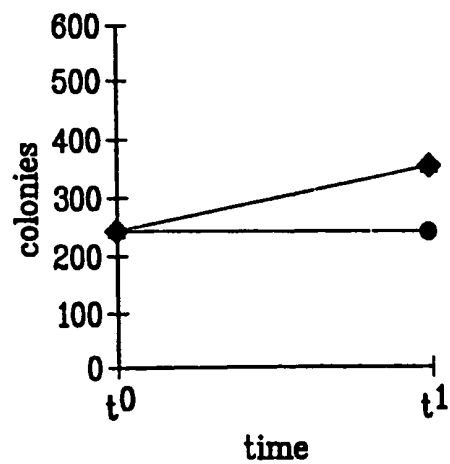
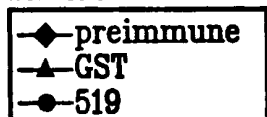
519 (33 kDa)
WESTERN BLOT
TP OMV

*FIG. 4C*

519 (33 kDa)
FACS

*FIG. 4D*

519 (33 kDa)
BACTERICIDAL ASSAY

*FIG. 4E*

519 (33 kDa)
ELISA assay: positive

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FIG. 5A

121 (40 kDa)

PURIFICATION

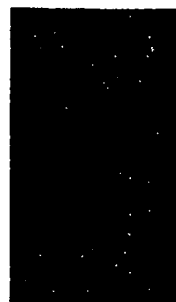
M1 121

*FIG. 5B*

121 (40 kDa)

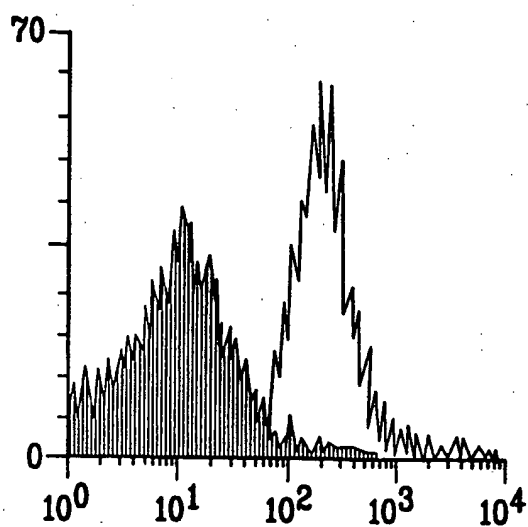
WESTERN BLOT

TP OMV

*FIG. 5C*

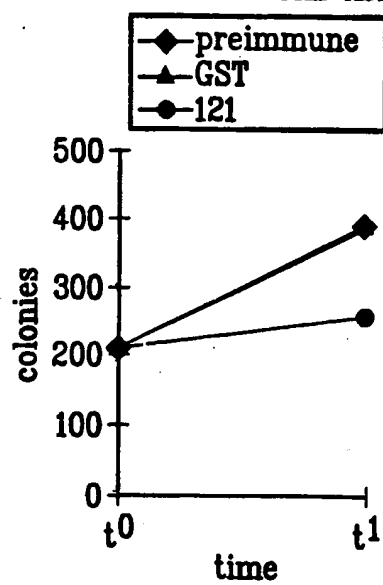
121 (40 kDa)

FACS

*FIG. 5D*

121 (40 kDa)

BACTERICIDAL ASSAY

*FIG. 5E*

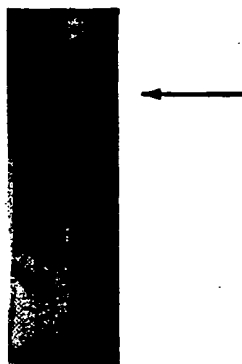
121 (40 kDa)

ELISA assay: positive

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FIG. 6A

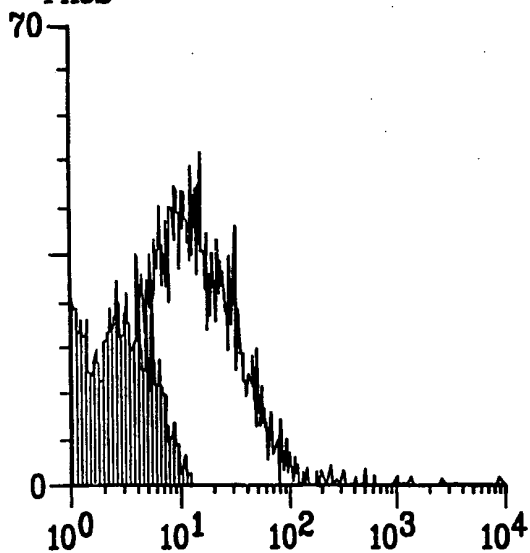
128 (101 kDa)
PURIFICATION
M1 128

*FIG. 6B*

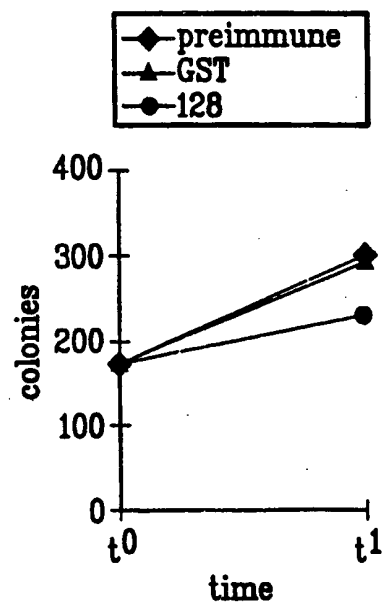
128 (101 kDa)
WESTERN BLOT
TP OMV

*FIG. 6C*

128 (101 kDa)
FACS

*FIG. 6D*

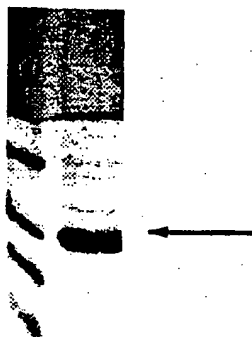
128 (101 kDa)
BACTERICIDAL ASSAY

*FIG. 6E*

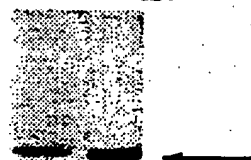
128 (101 kDa)
ELISA assay: positive

FIG. 7A

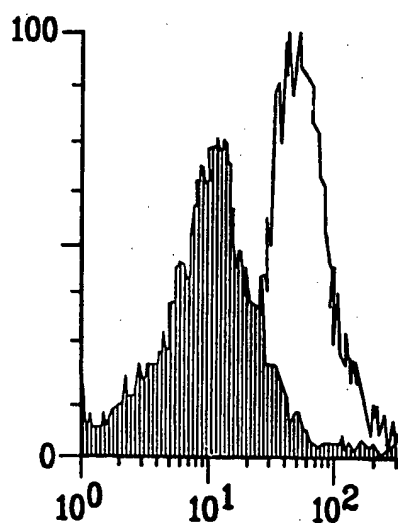
206 (17 kDa)
PURIFICATION
M1 206

*FIG. 7B*

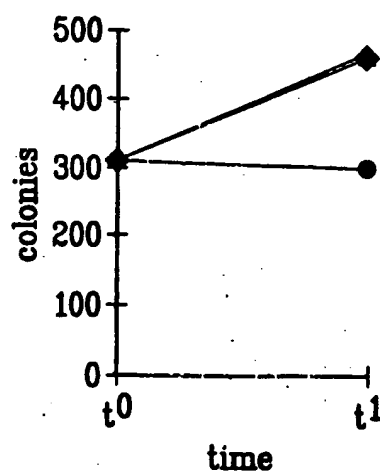
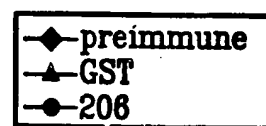
206 (17 kDa)
WESTERN BLOT
TP OMV

*FIG. 7C*

206 (17 kDa)
FACS

*FIG. 7D*

206 (17 kDa)
BACTERICIDAL ASSAY

*FIG. 7E*

206 (17 kDa)

ELISA assay: positive

FIG. 8A

287 (78 kDa)

PURIFICATION

M1 287

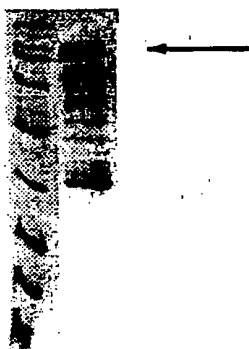


FIG. 8B

287 (78 kDa)

FACS

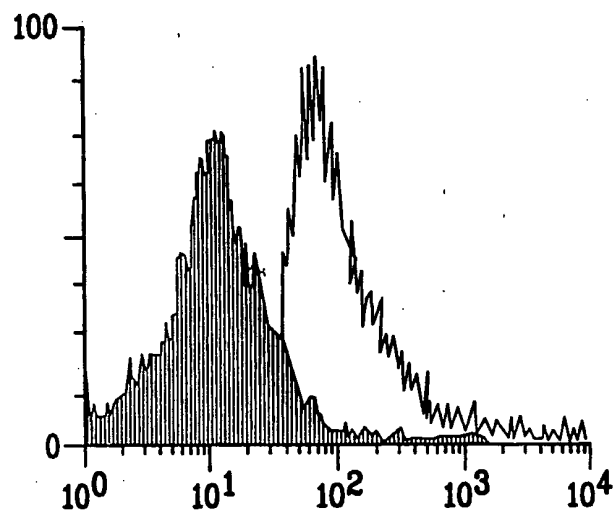


FIG. 8C

287 (78 kDa)

BACTERICIDAL ASSAY

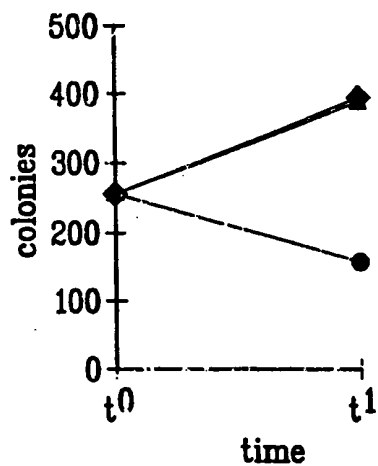
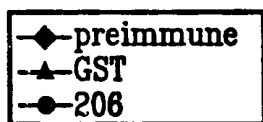


FIG. 8D

287 (78 kDa)

ELISA assay: positive

FIG. 9A

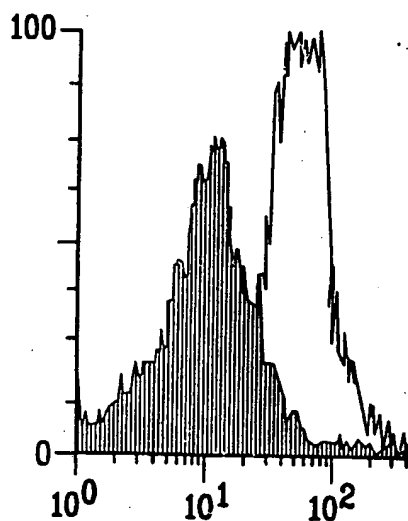
406 (33 kDa)
PURIFICATION
M1 406

*FIG. 9B*

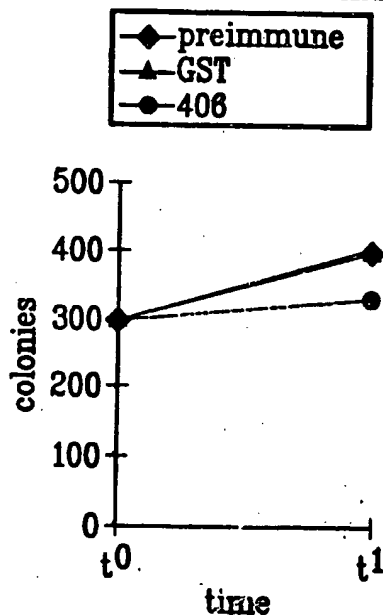
406 (33 kDa)
WESTERN BLOT
TP OMV

*FIG. 9C*

406 (33 kDa)
FACS

*FIG. 9D*

406 (33 kDa)
BACTERICIDAL ASSAY

*FIG. 9E*

406 (33 kDa)
ELISA assay: positive

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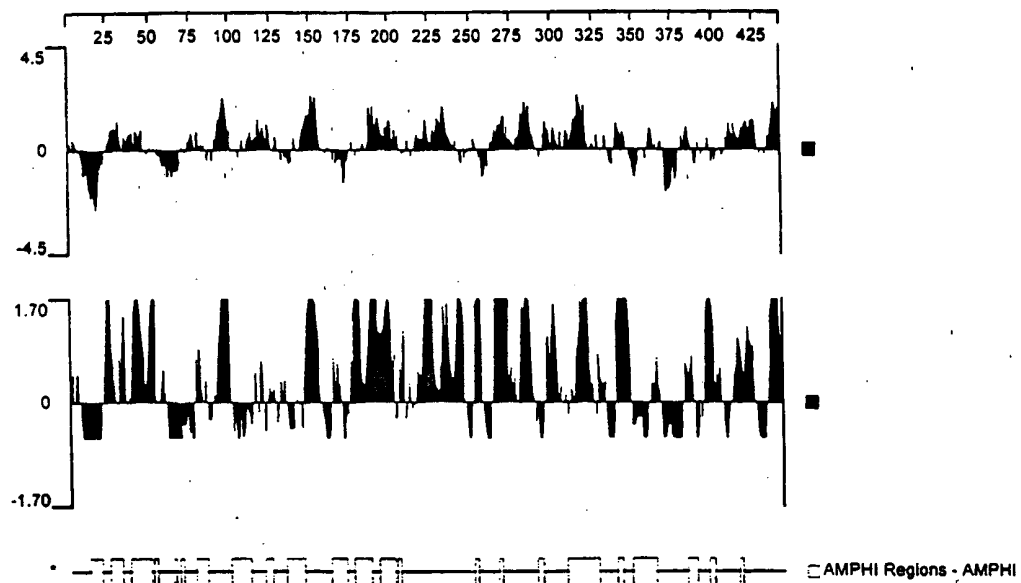
919Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 10

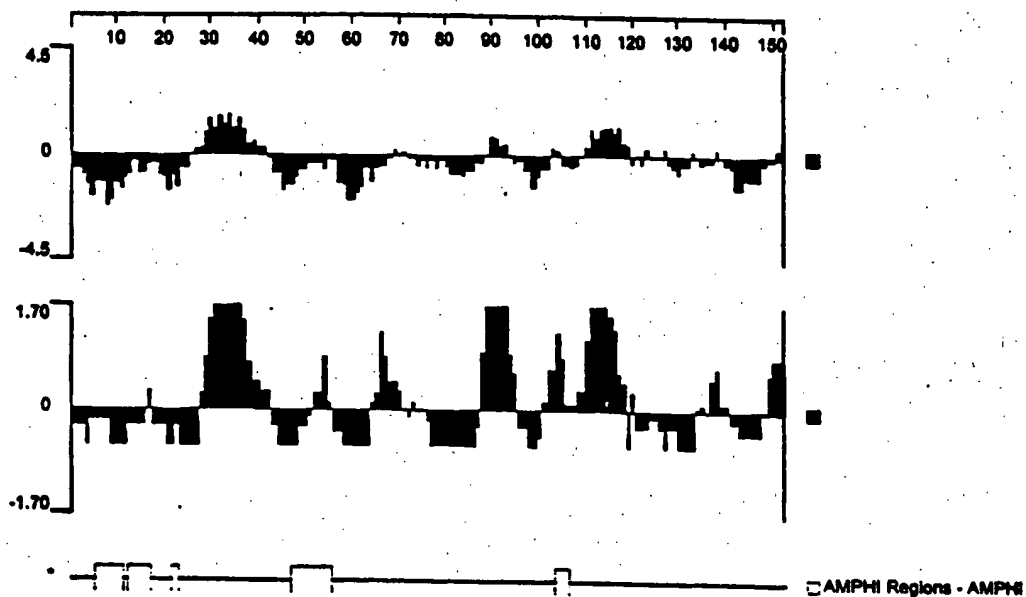
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 11

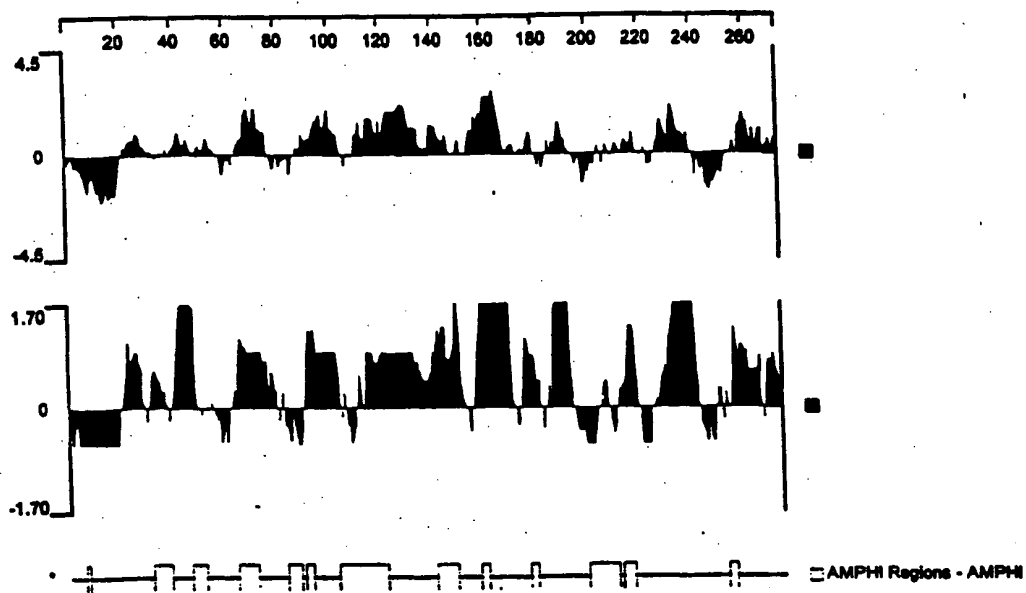
576-1Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 12

519-1
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

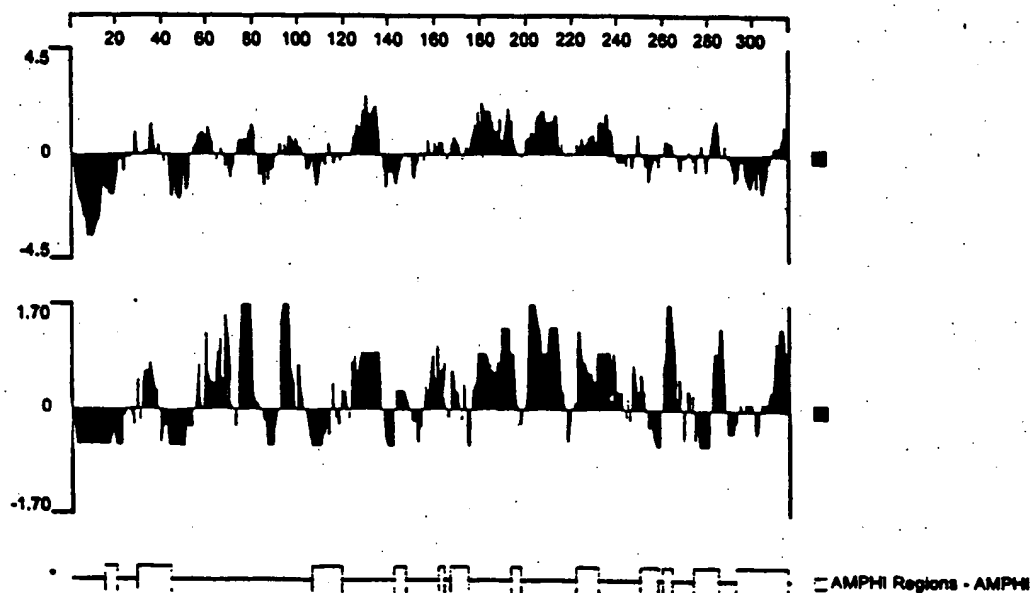


Fig. 13

121-1
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

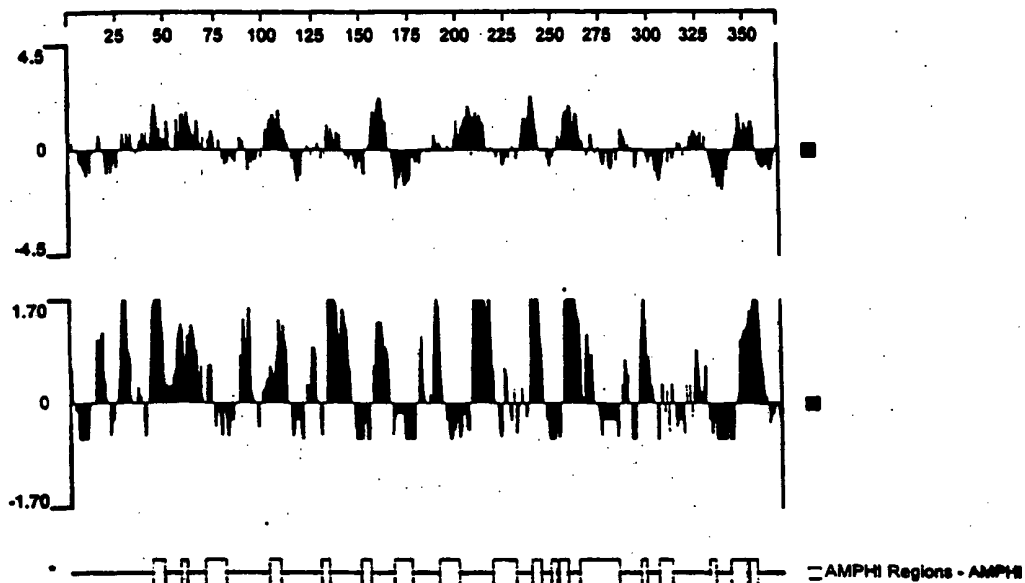


Fig. 14

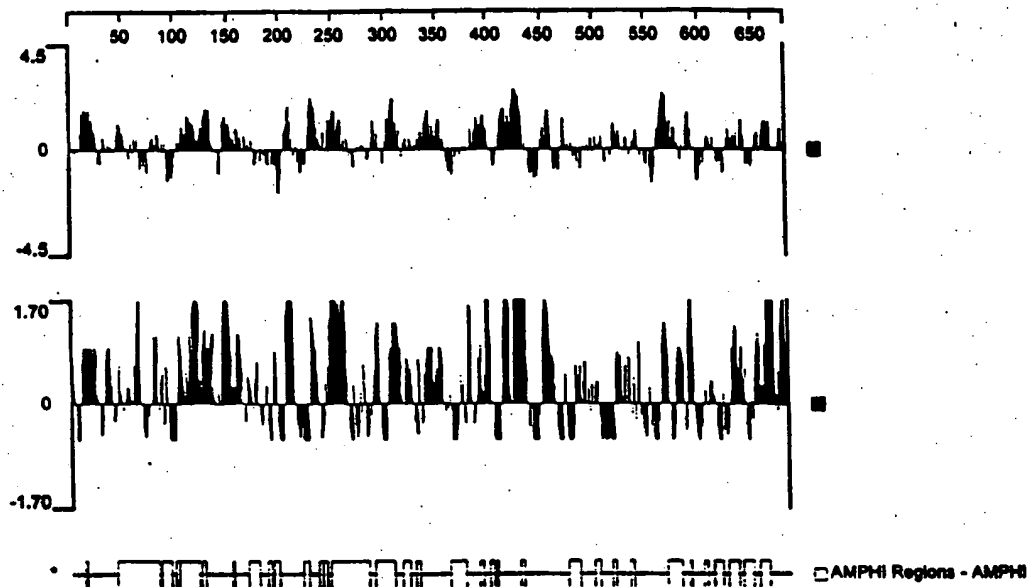
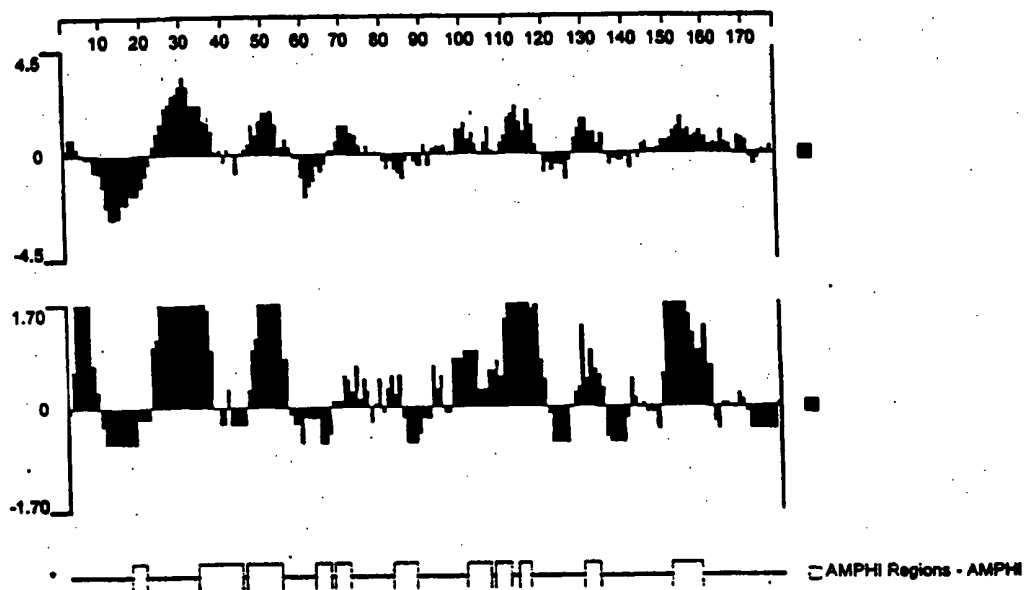
128-1Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 15

206**Hydrophilicity Plot, Antigenic Index and AMPHI Regions****Fig. 16**

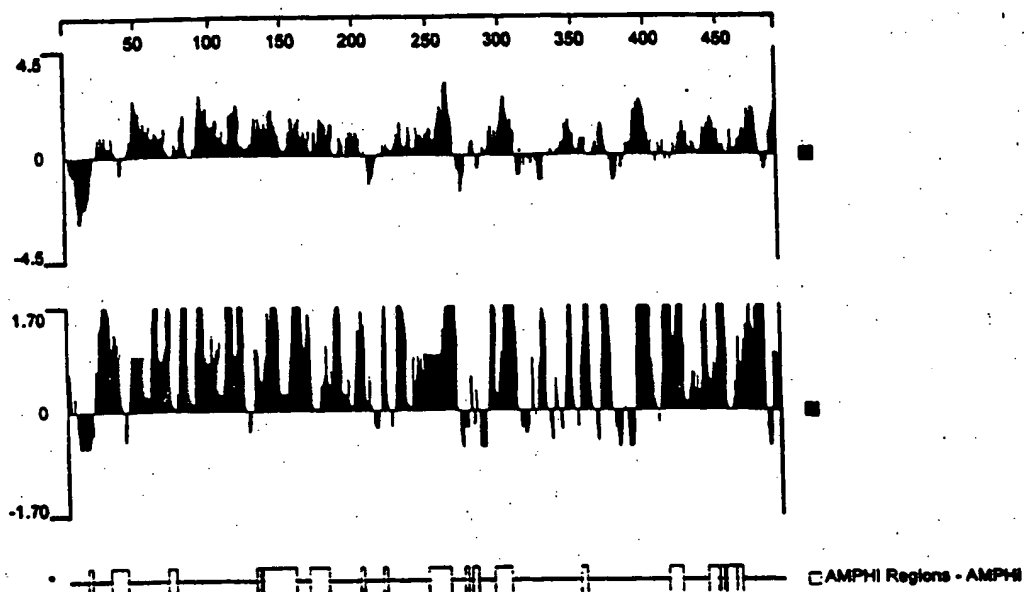
287Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 17

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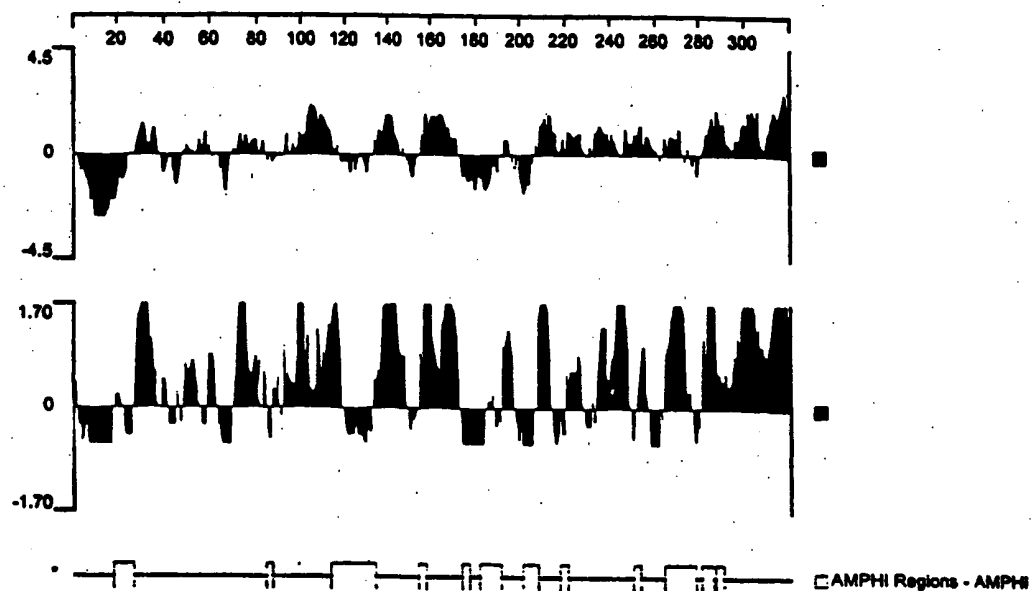
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 18

APPENDIX A

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
1	GNMAA01R	9888	10311
1	GNMAA27F	10785	11284
1	GNMAA27R	11771	12130
1	GNMBA57F	5365	5930
1	GNMBA57R	6584	7118
1	GNMCD17F	9484	10035
1	GNMCD21F	14937	15512
1	GNMCD21R	16217	16700
1	GNMCD26F	27033	27531
1	GNMCD26R	25650	26101
1	GNMCD28F	27012	27531
1	GNMCD58F	27525	28047
1	GNMCD58R	26208	26582
1	GNMCF39F	25928	26411
1	GNMCF39R	24501	25188
1	GNMCK12F	18475	18938
1	GNMCK12R	16734	17175
1	GNMCL43F	31284	31783
1	GNMCL43R	32803	33038
1	GNMCL77F	7112	7681
1	GNMCL77R	8587	9143
1	GNMCO24R	8321	8920
1	GNMCP77F	24803	25412
1	GNMCP77R	26585	27107
1	GNMCQ74F	14937	15617
1	GNMCQ74R	13764	14477
1	GNMCS43F	3607	4278
1	GNMCS56F	21955	22578
1	GNMCS57F	7909	8608
1	GNMCV14F	5771	6272
1	GNMCV15R	7143	7800
1	GNMCV64F	23017	23484
1	GNMCV64R	21277	22018
1	GNMCV74F	16980	17305
1	GNMCV74R	18058	18788
1	GNMCV83F	4008	4503
1	GNMCV83R	2788	3288
1	GNMCY30F	7157	7887
1	GNMCY30R	8378	8912
1	GNMCZ78F	14192	14686
1	GNMCZ78R	15697	16234
1	GNMCZ93F	31337	31862
1	GNMCZ93R	30119	30639
2	GNMAA02F	27133	27648

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
2	GNMAA02R	26120	26546
2	GNMAA38F	16163	16379
2	GNMAA38R	14815	15335
2	GNMAA46F	2337	2704
2	GNMAA46R	3242	3746
2	GNMBA17F	15637	15798
2	GNMCD47F	11113	11453
2	GNMCD78F	13704	14196
2	GNMCD78R	15013	15380
2	GNMCK27F	4941	5490
2	GNMCK27R	3670	4086
2	GNMCL17F	23033	23527
2	GNMCL17R	21424	21995
2	GNMCL82F	24805	25200
2	GNMCL82R	26093	26659
2	GNMCN19F	5929	6601
2	GNMCP32F	18556	19103
2	GNMCP32R	19956	20403
2	GNMCQ84F	16351	17040
2	GNMCQ92F	3243	3692
2	GNMCQ92R	2022	2644
2	GNMCS51F	6645	7300
2	GNMCV24F	28139	28637
2	GNMCV25R	26839	27453
2	GNMCV77F	5149	5575
2	GNMCV77R	6008	6841
2	GNMCY52F	21892	22580
2	GNMCY52R	23157	23662
2	GNMCY74F	21900	22552
2	GNMCY74R	23519	24073
2	GNMCZ69F	1489	1999
2	GNMCZ70F	1489	1985
2	GNMCZ70R	2707	3232
3	GNMAA03F	16946	17459
3	GNMAA03R	18236	18447
3	GNMAA15F	3641	4156
3	GNMAA15R	4704	5176
3	GNMCA12F	8812	9427
3	GNMCB27F	19908	20403
3	GNMCB27R	21309	21630
3	GNMCB59F	22046	22554
3	GNMCB59R	20650	21230
3	GNMCD50F	8711	9229
3	GNMCF53F	15376	15861
3	GNMCF53R	16619	17312
3	GNMCF86F	22322	22760

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
3	GNMCL55F	12659	13184
3	GNMCL55R	13854	14380
3	GNMCM46R	11972	12882
3	GNMCM63F	7397	8071
3	GNMCM63R	8734	9381
3	GNMCP05F	2224	2884
3	GNMCV27F	10472	10889
3	GNMCV28R	11455	12172
4	GNMAA04R	21387	21727
4	GNMAA86F	9998	10514
4	GNMAA86R	9150	9669
4	GNMAA70F	18444	19981
4	GNMAA70R	20448	20841
4	GNMAB18F	34311	34576
4	GNMAB18R	32660	33102
4	GNMBA24F	21403	21950
4	GNMCA71F	35444	36108
4	GNMCA85F	14803	15535
4	GNMCB48F	27141	27652
4	GNMCB48R	28559	29139
4	GNMCD85F	25929	26447
4	GNMCF35F	37597	38085
4	GNMCF35R	36881	37327
4	GNMCK26F	23722	24288
4	GNMCK26R	25176	25751
4	GNMCK39F	26270	26836
4	GNMCK39R	27576	27934
4	GNMCK64F	37686	38053
4	GNMCK64R	36358	36915
4	GNMCL60F	2659	3208
4	GNMCL60R	4028	4520
4	GNMCM12F	21992	22485
4	GNMCM12R	23335	23919
4	GNMCM80F	15507	16171
4	GNMCM80R	16284	16990
4	GNMCN08R	33415	33739
4	GNMCO47F	23101	23700
4	GNMCO47R	24872	25344
4	GNMCP24F	34864	35552
4	GNMCP24R	33620	34225
4	GNMCP44F	24613	24976
4	GNMCP44R	25712	26279
4	GNMCQ80F	35274	35864
4	GNMCQ80R	34053	34632
4	GNMCS02F	37528	38035
4	GNMCV40F	33203	33632

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
4	GNMCX19F	37333	38076
4	GNMCX19R	36229	36871
4	GNMCX25F	28667	29362
4	GNMCX25R	27755	28398
4	GNMCX31F	1336	2085
4	GNMCX31R	1	640
4	GNMCX38F	15063	15774
4	GNMCX38R	14158	14836
4	GNMCY53F	8159	8846
4	GNMCY53R	6905	7405
4	GNMCZ25F	42411	42912
4	GNMCZ25R	40673	41229
4	GNMCZ27F	4786	5245
4	GNMCZ27R	3484	4030
5	GNMAA05F	5819	6334
5	GNMAA05R	6898	7190
5	GNMAA09F	15867	16369
5	GNMAA09R	15935	16368
5	GNMAA50R	17996	18383
5	GNMAA51F	44043	44409
5	GNMAA51R	43157	43679
5	GNMCA06F	43254	43764
5	GNMCA72F	7437	8102
5	GNMCA87F	36458	36899
5	GNMCB41F	44654	45224
5	GNMCB41R	45601	46039
5	GNMCD77F	46927	47437
5	GNMCD77R	48378	48761
5	GNMCF13F	18408	18911
5	GNMCF13R	16858	17553
5	GNMCF26F	44946	45450
5	GNMCF26R	46355	47018
5	GNMCF51F	31870	32355
5	GNMCK15F	34028	34591
5	GNMCK15R	33072	33560
5	GNMCK52F	13042	13587
5	GNMCK52R	11706	12267
5	GNMCK67F	16111	16399
5	GNMCK67R	14116	14459
5	GNMCL36F	26130	26644
5	GNMCL36R	24478	25038
5	GNMCL57F	46883	47459
5	GNMCL57R	48232	48759
5	GNMCL93F	6901	7404
5	GNMCL93R	5298	5897
5	GNMCN22F	4118	4792

Coordinates of Sequences Released in Contig			
Contig No.	Sequence Name	Coordinate	Coordinate
5	GNMCN22R	5337	5939
5	GNMCN58F	17211	17798
5	GNMCN58R	15825	16436
5	GNMCN85F	38028	38688
5	GNMCN85R	39079	39689
5	GNMCP14F	47197	47893
5	GNMCP14R	47924	48597
5	GNMCP42F	23201	23701
5	GNMCP42R	24295	24875
5	GNMCP60F	31050	31537
5	GNMCP60R	29886	30442
5	GNMCQ39R	321	1003
5	GNMCS18F	39300	39713
5	GNMCS74F	41336	41970
5	GNMCS84F	47085	47801
5	GNMCS85R	48082	48687
5	GNMCV51F	33257	33720
5	GNMCV53F	35594	36103
5	GNMCV53R	36624	37232
5	GNMCV80F	3433	3924
5	GNMCV80R	2239	2949
5	GNMCX14F	15425	16088
5	GNMCX14R	14412	15041
5	GNMCY05F	26080	26788
5	GNMCY05R	25083	25685
5	GNMCY24F	45841	46684
5	GNMCY24R	47197	47748
5	GNMCY75F	9003	9618
5	GNMCY75R	9968	10503
5	GNMCZ74F	32693	33186
5	GNMCZ74R	31650	32179
6	GNMAA06F	43077	43280
6	GNMAA33F	21695	22031
6	GNMAA33R	22781	23120
6	GNMAA39F	11023	11380
6	GNMAA39R	12412	12870
6	GNMAB43F	13579	14098
6	GNMAB56F	20656	21079
6	GNMCA67F	37544	38219
6	GNMCB01F	34331	34902
6	GNMCB01R	35502	36050
6	GNMCD62F	6122	6648
6	GNMCD62R	4831	5183
6	GNMCD93F	1679	2157
6	GNMCD93R	3169	3495
6	GNMCK06F	20928	21478

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
6	GNMCK06R	19697	20289
6	GNMCL39F	24705	25251
6	GNMCL39R	23194	23548
6	GNMCM21F	32432	33056
6	GNMCM21R	33649	34334
6	GNMCN70R	14256	14926
6	GNMCO52F	13197	13922
6	GNMCO85F	26216	26827
6	GNMCO85R	25022	25686
6	GNMCS27F	16689	17300
6	GNMCS61F	3508	4184
6	GNMCS77F	40570	41276
6	GNMCS83F	32447	33093
6	GNMCS84R	30598	31235
6	GNMCV08F	42819	43260
6	GNMCV09R	44363	44932
6	GNMCV75F	14981	15479
6	GNMCX36F	38996	39738
6	GNMCX36R	39855	40528
6	GNMCX59F	39178	39574
6	GNMCX59R	40477	41178
6	GNMCY92F	24695	25185
6	GNMCZ42F	15656	16179
6	GNMCZ42R	17126	17641
6	GNMCZ59F	38912	39364
6	GNMCZ59R	37528	38062
7	GNMAA07F	8291	8808
7	GNMAA07R	9371	9793
7	GNMAA10F	39307	39822
7	GNMAA10R	37810	38060
7	GNMAA76F	289	796
7	GNMAA76R	1117	1517
7	GNMAB01F	33973	34541
7	GNMAB01R	34969	35306
7	GNMAB04F	53611	54157
7	GNMAB04R	52653	53059
7	GNMAB52F	37174	37740
7	GNMAB55F	52123	52618
7	GNMBA81F	28757	29327
7	GNMBA81R	27546	28097
7	GNMBB21F	40393	40959
7	GNMBB21R	39008	39449
7	GNMCA75F	31357	32032
7	GNMCB25F	33514	34085
7	GNMCB25R	34748	35431
7	GNMCB48F	14504	15191

Coordinates of Sequences Released in Contig			
Contig No.	Sequence Name	Coordinate	Coordinate
7	GNMCB56F	36433	37114
7	GNMCB56R	35380	36079
7	GNMCB67F	42103	42771
7	GNMCB67R	41133	41740
7	GNMCB69F	27142	27807
7	GNMCB69R	25881	26530
7	GNMCD33R	50431	50757
7	GNMCD51F	6134	6629
7	GNMCF11F	35219	35727
7	GNMCF11R	36753	37229
7	GNMCF37F	51873	52358
7	GNMCF37R	49987	50607
7	GNMCF45F	40885	41177
7	GNMCF45R	41785	42403
7	GNMCF58F	6844	7311
7	GNMCF58R	5523	6203
7	GNMCF89F	52013	52469
7	GNMCF89R	53383	54002
7	GNMCH63F	39350	39770
7	GNMCH80F	20170	20807
7	GNMCK02F	43141	43483
7	GNMCK02R	41418	41852
7	GNMCK03F	41843	42407
7	GNMCK03R	40387	40952
7	GNMCK75F	29011	29346
7	GNMCK75R	27279	27840
7	GNMCL37F	37583	38097
7	GNMCL37R	38870	39442
7	GNMCL38F	38485	38990
7	GNMCL38R	37281	37843
7	GNMCL50F	52471	53003
7	GNMCL50R	51307	51879
7	GNMCM16R	43200	43843
7	GNMCM28F	31079	31677
7	GNMCM28R	29983	30699
7	GNMCM75F	29428	30002
7	GNMCM75R	28230	28847
7	GNMCN07R	31678	32286
7	GNMCN08F	30220	30908
7	GNMCN66F	48682	50383
7	GNMCN68R	48507	48702
7	GNMCP52F	53906	54238
7	GNMCP75F	3335	3631
7	GNMCP75R	2430	2916
7	GNMCP87F	19818	20336
7	GNMCP87R	21539	21853

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
7	GNMCQ05F	16992	17629
7	GNMCQ05R	15900	16596
7	GNMCQ06F	8173	8758
7	GNMCQ06R	6774	7461
7	GNMCQ11F	35268	35953
7	GNMCQ11R	36305	36981
7	GNMCQ13F	28320	29037
7	GNMCQ13R	29418	30079
7	GNMCQ24F	40176	40783
7	GNMCQ24R	40841	41510
7	GNMCQ37R	20188	20919
7	GNMCQ55F	40743	41309
7	GNMCQ55R	41980	42698
7	GNMCS30F	49344	49993
7	GNMCS53F	16879	17595
7	GNMCS95F	29469	29622
7	GNMCV01R	30937	31651
7	GNMCV17F	24334	24812
7	GNMCV18R	25368	26100
7	GNMCV28F	26427	26916
7	GNMCV29R	24847	25211
7	GNMCV69F	16647	17098
7	GNMCV91F	10009	10521
7	GNMCV91R	8630	9420
7	GNMCX23F	36634	37387
7	GNMCX23R	38318	38893
7	GNMCX24R	33857	34497
7	GNMCX67F	44537	45096
7	GNMCX67R	45763	46455
7	GNMCX77F	3423	4090
7	GNMCY56F	44117	44788
7	GNMGY56R	45883	46440
7	GNMCY79F	37394	38041
7	GNMCY79R	38954	39287
7	GNMCY84F	7387	8023
7	GNMCY84R	8749	9223
7	GNMCZ21F	28454	28986
7	GNMCZ21R	29774	30347
8	GNMAA08F	3883	4232
8	GNMAA08R	4930	5373
8	GNMAA17F	20102	20622
8	GNMAA17R	18135	19510
8	GNMAA18F	18255	18770
8	GNMAA69F	3985	4501
8	GNMAA69R	2840	3310
8	GNMBA02R	18827	19205

Coordinates of Sequences Released in Contig			
Contig No.	Sequence Name	Coordinate	Coordinate
8	GNMBA38R	20183	20729
8	GNMBB17F	16245	16809
8	GNMBB17R	14789	15278
8	GNMCD01F	1728	2071
8	GNMCD01R	3032	3580
8	GNMCD57F	15533	16080
8	GNMCD57R	14017	14387
8	GNMCH21F	7735	8074
8	GNMCH58F	20183	20483
8	GNMCK17F	12025	12589
8	GNMCK17R	13519	14088
8	GNMCN37F	11716	12387
8	GNMCN37R	10459	10888
8	GNMCQ71F	15717	16384
8	GNMCQ71R	17082	17789
8	GNMCV56F	2818	3221
8	GNMCV56R	4184	4873
8	GNMCW18F	11443	12002
8	GNMCW18R	12243	12874
8	GNMCX44F	13230	13907
8	GNMCX44R	12083	12776
8	GNMCX81F	6804	7509
8	GNMCX81R	8613	9312
9	GNMAA11R	3820	4070
9	GNMCF10F	4237	4718
9	GNMCF10R	5381	6021
9	GNMCF16F	6231	6723
9	GNMCF16R	4978	5578
9	GNMCH10F	8003	8324
9	GNMCH10R	6412	6686
9	GNMCS36F	8057	8725
9	GNMCX89R	7787	8447
10	GNMAA12F	700	1214
11	GNMAA13F	48121	48638
11	GNMAA13R	49787	50045
11	GNMAA73F	9308	9827
11	GNMAA73R	10319	10725
11	GNMAA95F	5088	5583
11	GNMAA95R	4340	4731
11	GNMAB70F	44475	44803
11	GNMAB70R	45692	46213
11	GNMAB84F	34949	35517
11	GNMAB84R	35628	36115
11	GNMBA30F	35071	35637
11	GNMBA30R	34080	34618
11	GNMBA65F	46358	46779

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
11	GNMBA65R	48334	48629
11	GNMBA96F	25616	26168
11	GNMBA96R	27180	27576
11	GNMCA79F	12432	13093
11	GNMCA81F	64372	65033
11	GNMCB75F	12474	13003
11	GNMCB75R	11368	11898
11	GNMCB79F	12463	12998
11	GNMCB79R	11374	11879
11	GNMCB80F	12394	13044
11	GNMCB80R	11355	11761
11	GNMCB88F	26453	27107
11	GNMCB88R	25225	25878
11	GNMCD37R	1837	2210
11	GNMCD48F	36014	36541
11	GNMCD48R	37485	37833
11	GNMCD61F	33776	34331
11	GNMCD61R	32513	32886
11	GNMCF05F	61923	62430
11	GNMCF05R	63324	63994
11	GNMCF20F	64093	64548
11	GNMCF20R	62670	63312
11	GNMCF27F	7865	8322
11	GNMCF27R	6252	6941
11	GNMCF31F	2643	3144
11	GNMCF31R	3621	4255
11	GNMCF32F	34812	35310
11	GNMCF32R	33489	34167
11	GNMCF44F	7905	8323
11	GNMCF44R	6275	6806
11	GNMCF54F	4208	4682
11	GNMCF54R	5789	6419
11	GNMCH29F	4781	5137
11	GNMCH75F	60773	61203
11	GNMCH75R	62111	62403
11	GNMCK80F	40661	41202
11	GNMCK80R	39298	39847
11	GNMCL01F	59052	59569
11	GNMCL01R	57689	58283
11	GNMCL62F	36623	37174
11	GNMCL62R	38138	38721
11	GNMCL65F	11758	12282
11	GNMCL65R	13221	13807
11	GNMCM44R	3393	4077
11	GNMCM85R	60497	61118
11	GNMCN29F	75370	76048

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
11	GNMCN29R	76487	77001
11	GNMCN90F	53115	53836
11	GNMCN90R	51986	52525
11	GNMCP26F	38602	39106
11	GNMCP26R	37257	37549
11	GNMCQ58F	61396	62055
11	GNMCQ58R	62637	63355
11	GNMCS12F	7065	7598
11	GNMCV05F	4623	5085
11	GNMCV06R	3299	4083
11	GNMCV16F	51884	52341
11	GNMCV17R	53784	54354
11	GNMCV88F	70556	71043
11	GNMCV88R	69005	69740
11	GNMCW41F	39495	40133
11	GNMCX04F	26396	27141
11	GNMCX04R	25242	25882
11	GNMCX65F	43846	44360
11	GNMCX65R	45795	46258
11	GNMCY01F	42714	43318
11	GNMCY03F	16064	16747
11	GNMCY03R	17171	17685
11	GNMCY76F	36967	37624
11	GNMCY76R	38440	38999
11	GNMCZ26F	45695	46211
11	GNMCZ26R	46903	47445
11	GNMCZ30F	53419	53933
11	GNMCZ30R	54651	55202
11	GNMCZ86R	43568	43996
12	GNMAA14F	51035	51374
12	GNMAA62F	22307	22668
12	GNMAA62R	21211	21585
12	GNMAA84F	4132	4648
12	GNMAA84R	3028	3497
12	GNMAB19F	53197	53641
12	GNMAB19R	51715	51941
12	GNMAB34F	59820	60248
12	GNMAB75F	8230	8726
12	GNMAB75R	6772	7086
12	GNMBA16F	61880	62448
12	GNMBA16R	63397	63930
12	GNMBA55F	54894	55463
12	GNMBA55R	53249	53699
12	GNMBB07F	45401	45967
12	GNMBB07R	46474	46846
12	GNMBB23F	23330	23896

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
12	GNMBB23R	21762	22258
12	GNMBB28F	17524	18093
12	GNMBB28R	19255	19581
12	GNMCA08F	80267	80572
12	GNMCA26F	95492	95876
12	GNMCB71F	3761	4447
12	GNMCB71R	2760	3305
12	GNMCD40F	25822	26340
12	GNMCD40R	27392	27712
12	GNMCF14F	254	698
12	GNMCF23F	25032	25512
12	GNMCF23R	26296	26954
12	GNMCF59F	543	781
12	GNMCF59R	1909	2359
12	GNMCF75F	38537	38993
12	GNMCH09F	70027	70360
12	GNMCH09R	68764	69057
12	GNMCK63F	82010	82461
12	GNMCK63R	83284	83844
12	GNMCL27F	36594	37139
12	GNMCL27R	38339	38900
12	GNMCL83F	24969	25304
12	GNMCL83R	26594	27175
12	GNMCM24F	58035	58620
12	GNMCM24R	56788	57519
12	GNMCM26R	43862	44449
12	GNMCM33F	59354	60069
12	GNMCM33R	58194	58939
12	GNMCN23F	31658	32330
12	GNMCN23R	29999	30623
12	GNMCP07F	62762	63498
12	GNMCP07R	61716	62463
12	GNMCQ25F	29033	29713
12	GNMCQ25R	27952	28642
12	GNMCQ31F	33826	34489
12	GNMCQ31R	32628	33318
12	GNMCQ35F	99046	99645
12	GNMCQ35R	100151	100867
12	GNMCS06F	35210	35790
12	GNMCS07F	38327	38874
12	GNMCS37F	93209	93927
12	GNMCS45F	52207	52867
12	GNMCS59F	49955	50647
12	GNMCS63F	13556	14245
12	GNMCS75F	95191	95899
12	GNMCS94F	39007	39638

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
12	GNMCV02F	96642	97004
12	GNMCV03R	95290	96043
12	GNMCV19F	13169	13632
12	GNMCV20R	11334	12063
12	GNMCV67F	12472	12929
12	GNMCV67R	11158	11877
12	GNMCV95F	48011	48518
12	GNMCV95R	48642	49450
12	GNMCX03F	64105	64613
12	GNMCX03R	65502	66139
12	GNMCX62F	91416	91831
12	GNMCX68R	55716	56405
12	GNMCX82F	55372	56082
12	GNMCX82R	54147	54839
12	GNMCX90F	81959	82454
12	GNMCX90R	83099	83791
12	GNMCX91F	82087	82392
12	GNMCY47F	80254	80920
12	GNMCY47R	78886	79381
12	GNMCY81F	17736	18413
12	GNMCY81R	19180	19621
12	GNMCZ02F	24891	25412
12	GNMCZ02R	26406	26946
12	GNMCZ10F	34243	34706
12	GNMCZ10R	35555	36086
12	GNMCZ54F	59674	60174
12	GNMCZ54R	58180	58651
12	GNMCZ65F	70323	70828
12	GNMCZ65R	71871	72382
13	GNMAA19F	12931	13449
13	GNMAA19R	11822	12291
13	GNMAA55R	4581	5101
13	GNMAA63F	36862	37225
13	GNMAA63R	35706	36096
13	GNMAA77F	20561	20750
13	GNMAB20F	14416	14852
13	GNMBA41R	21126	21626
13	GNMCB15F	3423	3980
13	GNMCB15R	4343	4984
13	GNMCB38F	22717	23346
13	GNMCB38R	21451	22022
13	GNMCB57F	11695	12343
13	GNMCD23F	33967	34506
13	GNMCD23R	32498	32984
13	GNMCD27F	25756	26330
13	GNMCD27R	24266	24695

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
13	GNMCD30F	25823	26369
13	GNMCD30R	24703	25016
13	GNMCD91F	36457	36958
13	GNMCF77F	11321	11777
13	GNMCF77R	9878	10580
13	GNMCH04F	9222	9510
13	GNMCK07F	20658	21162
13	GNMCK07R	21983	22516
13	GNMCK24F	11029	11566
13	GNMCK24R	12531	12904
13	GNMCL26F	33412	33883
13	GNMCL26R	32004	32585
13	GNMCL42F	25017	25487
13	GNMCL42R	26410	26988
13	GNMCM18F	9081	9580
13	GNMCM18R	7774	8463
13	GNMCM79F	28296	28959
13	GNMCM79R	29623	30321
13	GNMCN57F	43959	44583
13	GNMCN57R	42560	43109
13	GNMCO81F	36053	36717
13	GNMCO81R	34853	35488
13	GNMCP18F	20932	21612
13	GNMCP18R	19724	20394
13	GNMCS73F	26639	27284
13	GNMCS76R	25539	26264
13	GNMCV09F	46801	47242
13	GNMCV10R	45342	46019
13	GNMCV48F	40436	40867
13	GNMCV81F	21352	21853
13	GNMCW37F	45183	45820
13	GNMCX11F	1628	2393
13	GNMCX11R	2983	3629
13	GNMCX76F	41236	41920
13	GNMCX76R	42308	42978
13	GNMCY20F	20524	21188
13	GNMCY20R	19350	19922
13	GNMCY46F	15097	15751
13	GNMCY46R	16501	17054
13	GNMCY87F	21699	22313
13	GNMCY87R	20274	20660
13	GNMCZ29F	46571	47106
14	GNMAA20F	2883	3399
15	GNMAA21F	12719	13236
15	GNMAA21R	11967	12439
15	GNMAA83F	2799	3318

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
15	GNMAA83R	3978	4448
15	GNMBA09F	4054	4621
15	GNMCB52F	15275	16007
15	GNMCB52R	16498	16827
15	GNMCB77F	18627	19229
15	GNMCB77R	20284	20766
15	GNMCB83F	18623	19271
15	GNMCB83R	20266	20777
15	GNMCL14F	3072	3593
15	GNMCL14R	1651	2228
15	GNMCL87R	9692	10245
15	GNMCN52F	5357	5991
15	GNMCN52R	6753	7339
15	GNMCP45F	11548	12079
15	GNMCP45R	13429	13801
15	GNMCQ09F	19788	20364
15	GNMCQ09R	18441	19134
15	GNMCQ40F	20922	21572
15	GNMCQ40R	22245	22939
15	GNMCV26F	13405	13894
15	GNMCV27R	12194	12828
15	GNMCW08F	23327	23910
15	GNMCX17F	4323	5048
15	GNMCX17R	3040	3690
16	GNMAA22F	54115	54632
16	GNMAA22R	55087	55557
16	GNMAA40R	44790	45219
16	GNMAA72F	58127	58639
16	GNMAA72R	57179	57650
16	GNMAB05F	47515	48081
16	GNMAB05R	46674	47004
16	GNMAB06F	65453	66020
16	GNMAB06R	66416	66833
16	GNMAB07F	65453	65772
16	GNMAB28F	70440	71008
16	GNMAB28R	71467	71808
16	GNMAB41F	21694	22260
16	GNMAB54F	45585	46150
16	GNMAB65F	18770	19084
16	GNMBA69F	9418	9986
16	GNMBA69R	8303	8848
16	GNMBA76F	39980	40549
16	GNMBA76R	41451	41944
16	GNMBA79R	1185	1359
16	GNMCA89F	63127	63781
16	GNMCB30F	5241	5748

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
16	GNMCB32R	3919	4495
16	GNMCD69F	20174	20609
16	GNMCD69R	21508	21899
16	GNMCD74F	20284	20751
16	GNMCF08F	25798	26287
16	GNMCF08R	24361	25036
16	GNMCF36R	42733	43371
16	GNMCF46R	4203	4663
16	GNMCF48F	40973	41398
16	GNMCF48R	39629	40232
16	GNMCF73F	27684	28143
16	GNMCF73R	26442	27127
16	GNMCF81F	67923	68332
16	GNMCH17F	68971	69291
16	GNMCH34R	22199	22496
16	GNMCK28F	17936	18486
16	GNMCK28R	16766	17104
16	GNMCK32F	20788	21317
16	GNMCK32R	21768	22345
16	GNMCK85F	4360	4910
16	GNMCK85R	5620	6191
16	GNMCL06F	5123	5624
16	GNMCL06R	3812	4383
16	GNMCL34F	28058	28532
16	GNMCL34R	26957	27535
16	GNMCL63F	31053	31621
16	GNMCL63R	32284	32700
16	GNMCL70F	26168	26684
16	GNMCM31F	50181	50817
16	GNMCM31R	48867	49582
16	GNMCN28F	69538	70215
16	GNMCN28R	68459	69068
16	GNMCN84F	68423	69040
16	GNMCN84R	66998	67589
16	GNMCO18F	2622	3166
16	GNMCO18R	1677	2332
16	GNMCO35F	70510	71084
16	GNMCO35R	69198	69780
16	GNMCP19F	46453	47147
16	GNMCP19R	48299	48862
16	GNMCP43F	14799	15124
16	GNMCQ02F	19223	19930
16	GNMCQ02R	20338	21001
16	GNMCQ22F	21355	22030
16	GNMCQ22R	19917	20600
16	GNMCQ53F	7175	7907

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
16	GNMCQ53R	8198	8928
16	GNMCQ96R	29548	30182
16	GNMCS41F	29075	29776
16	GNMCS68F	9040	9703
16	GNMCS75R	1277	1893
16	GNMCS76F	2498	3167
16	GNMCV38F	37452	37889
16	GNMCV55R	34048	34804
16	GNMCV60F	58043	59536
16	GNMCV60R	57614	58367
16	GNMCX12F	3746	4302
16	GNMCX12R	5111	5734
16	GNMCX21F	11333	11997
16	GNMCX21R	10200	10848
16	GNMCX63F	225	712
16	GNMCY14F	72030	72750
16	GNMCY14R	70731	71300
16	GNMCY23F	43229	43994
16	GNMCY23R	42083	42641
16	GNMCY41F	27768	28553
16	GNMCY41R	28801	29356
16	GNMCY50F	59253	60030
16	GNMCY50R	58094	58480
16	GNMCY59F	48831	49574
16	GNMCY59R	50018	50543
16	GNMCZ40F	12172	12645
16	GNMCZ40R	13578	14094
16	GNMCZ41F	60265	60795
16	GNMCZ41R	61535	62088
16	GNMCZ80F	29797	30278
16	GNMCZ80R	28542	29086
16	GNMCZ90R	34086	34573
17	GNMAA23F	31103	31553
17	GNMAA23R	32120	32558
17	GNMAA31F	20779	21295
17	GNMAA31R	21615	22086
17	GNMAA67F	32770	33282
17	GNMAA67R	33955	34310
17	GNMAB08F	35151	35717
17	GNMAB08R	33887	34310
17	GNMBA18F	51385	51952
17	GNMBA36F	8398	8967
17	GNMBA36R	9832	10331
17	GNMBA54F	57853	58426
17	GNMBA54R	56651	57182
17	GNMBA74F	22767	23336

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
17	GNMBA74R	21413	21911
17	GNMBA85F	33077	33648
17	GNMBA85R	31797	32251
17	GNMCA19F	36042	36621
17	GNMCB06F	26433	26953
17	GNMCB06R	28247	28714
17	GNMCB10F	38250	38813
17	GNMCB10R	36758	37384
17	GNMCB82F	31729	32377
17	GNMCB82R	32858	33235
17	GNMCF22F	37912	38405
17	GNMCF22R	36753	37421
17	GNMCK05F	7321	7797
17	GNMCK05R	5987	6514
17	GNMCK57F	39678	40046
17	GNMCK57R	40958	41325
17	GNMCM38F	10453	11189
17	GNMCM38R	11737	12393
17	GNMCM58F	22688	23288
17	GNMCM58R	23628	24315
17	GNMCN30F	55573	56235
17	GNMCN30R	56832	57420
17	GNMCO01F	27343	28038
17	GNMCO07F	12194	12723
17	GNMCO07R	13433	14166
17	GNMCO26R	5725	6371
17	GNMCO43F	35750	36434
17	GNMCO43R	37161	37681
17	GNMCO44F	32920	33658
17	GNMCO44R	31733	32327
17	GNMCO55F	10439	11147
17	GNMCO55R	12310	12961
17	GNMCO56F	54670	55322
17	GNMCO56R	55704	56309
17	GNMCP57F	10671	10932
17	GNMCP57R	8680	9034
17	GNMCP66F	57727	58211
17	GNMCP66R	58838	59416
17	GNMCQ42F	22050	22733
17	GNMCQ42R	23218	23942
17	GNMCQ81F	41410	42152
17	GNMCQ81R	42968	43610
17	GNMCS03F	707	1334
17	GNMCS35F	52431	53137
17	GNMCS44F	35071	35764
17	GNMCS70F	6806	7540

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
17	GNMCS89F	38449	39120
17	GNMCS90R	39272	39972
17	GNMCV42F	51980	52438
17	GNMCV92F	43715	44212
17	GNMCV92R	42381	43040
17	GNMCX53F	18078	18438
17	GNMCX53R	16832	17287
17	GNMCY21F	26278	26984
17	GNMCY21R	25220	25785
17	GNMCY43F	55511	56209
17	GNMCY58F	10948	11675
17	GNMCY58R	9574	10130
17	GNMCZ14F	4034	4557
17	GNMCZ14R	5449	5997
17	GNMCZ81F	12505	13018
17	GNMCZ81R	10929	11485
18	GNMAA24F	14784	15300
18	GNMAA24R	15822	16278
18	GNMAA91F	3107	3623
18	GNMAA93F	14115	14633
18	GNMAA93R	12779	13158
18	GNMAB47F	6438	7001
18	GNMCA24F	17599	18212
18	GNMCB51F	10483	11109
18	GNMCB51R	9080	9547
18	GNMCK79F	4421	4831
18	GNMCK79R	5949	6533
18	GNMCM27F	17624	18228
18	GNMCM27R	16432	17178
18	GNMCM56F	13815	14180
18	GNMCM56R	14770	15435
18	GNMCN40R	15893	16523
18	GNMCN44F	14488	15185
18	GNMCN44R	15922	16524
18	GNMCP83F	14201	14738
18	GNMCP83R	15873	16259
18	GNMCY13F	2490	3240
18	GNMCZ03F	14791	15109
18	GNMCZ03R	16087	16657
18	GNMCZ15F	6918	7405
18	GNMCZ15R	5483	6044
18	GNMCZ61F	15232	15736
18	GNMCZ61R	16804	17347
19	GNMAA25F	3689	4210
19	GNMAA25R	4679	5150
19	GNMAA53F	17218	17584

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
19	GNMAA53R	16131	16651
19	GNMAB22F	11317	11854
19	GNMBA56F	29237	29799
19	GNMBB20F	42956	43521
19	GNMBB20R	41743	42275
19	GNMCB08F	1626	2188
19	GNMCB08R	2749	3408
19	GNMCB49F	24542	25193
19	GNMCB49R	23154	23800
19	GNMCB50F	1442	2136
19	GNMCB50R	457	1122
19	GNMCB84F	25574	26173
19	GNMCB84R	24112	24577
19	GNMCD36F	32463	32986
19	GNMCF17F	11187	11695
19	GNMCF17R	9855	10520
19	GNMCF56F	43830	44301
19	GNMCF56R	42446	43137
19	GNMCF62F	46052	46506
19	GNMCH41R	48920	49204
19	GNMCK19F	5471	5977
19	GNMCK19R	6934	7451
19	GNMCK60F	19464	19828
19	GNMCK60R	20624	21189
19	GNMCL07F	29947	30379
19	GNMCL07R	31253	31828
19	GNMCL47F	13187	13681
19	GNMCL47R	11739	12309
19	GNMCL67R	10328	10861
19	GNMCM83F	7074	7667
19	GNMCM83R	5824	6505
19	GNMCM87R	6816	7475
19	GNMCN69F	21718	22367
19	GNMCN69R	23279	23896
19	GNMCO19F	7892	8641
19	GNMCO19R	6509	7230
19	GNMCQ23F	22847	23439
19	GNMCQ23R	24531	25070
19	GNMCQ63F	24578	25176
19	GNMCQ63R	23445	24129
19	GNMCS09F	31343	31944
19	GNMCS34F	32710	33397
19	GNMCV13F	11334	11854
19	GNMCV14R	10046	10690
19	GNMCX15F	8333	9060
19	GNMCX15R	10180	10827

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
19	GNMCX27F	8333	9080
19	GNMCX27R	10188	10827
19	GNMCX56F	40847	41203
19	GNMCX56R	41803	42599
19	GNMCX87F	33938	34084
19	GNMCX87R	31659	32349
19	GNMCY07F	37487	38035
19	GNMCZ04R	24380	24843
20	GNMAA26F	11314	11834
20	GNMAA34R	15825	16187
20	GNMBA46F	8402	9971
20	GNMBA83F	8481	10050
20	GNMBA83R	11039	11224
20	GNMBA92F	3718	4284
20	GNMBA92R	2437	2882
20	GNMCA93F	10570	11228
20	GNMCB42F	12316	12924
20	GNMCB42R	10720	11380
20	GNMCF68F	145	549
20	GNMCS13F	3147	3776
20	GNMCS19F	3135	3707
20	GNMCV43F	4832	5463
20	GNMCV43R	3493	4272
20	GNMCX01R	8929	9578
20	GNMCX32F	2827	3562
20	GNMCX32R	1753	2385
21	GNMAA29F	7970	8459
21	GNMAA29R	6873	7381
21	GNMAA79F	60518	61036
21	GNMAA79R	61382	61783
21	GNMAB13F	91199	91695
21	GNMAB13R	90055	90480
21	GNMAB15F	18098	18688
21	GNMAB15R	17086	17514
21	GNMAB38F	89228	89784
21	GNMAB49F	90018	90554
21	GNMAB53F	57859	58423
21	GNMAB76F	69791	70359
21	GNMAB76R	71099	71621
21	GNMBA08F	88398	88981
21	GNMBA08R	89946	90480
21	GNMBA62F	91149	91717
21	GNMBA62R	90149	90587
21	GNMBB08F	57329	57895
21	GNMBB08R	58629	59155
21	GNMCB36F	86172	86807

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
21	GNMCB36R	87700	88359
21	GNMCB40F	55242	55889
21	GNMCB40R	56581	57269
21	GNMCD13F	26267	26840
21	GNMCD13R	24739	25235
21	GNMCD14F	63282	63678
21	GNMCD22F	39214	39744
21	GNMCD89F	20621	21136
21	GNMCD89R	19243	19626
21	GNMCE04F	48264	48570
21	GNMCE16F	8955	9401
21	GNMCE16R	10419	10933
21	GNMCK72F	28120	28413
21	GNMCK72R	29725	30288
21	GNMCK82F	16224	16679
21	GNMCK82R	17910	18284
21	GNMCK92F	21493	21930
21	GNMCK92R	22899	23382
21	GNMCL15F	15475	16027
21	GNMCL15R	16323	16894
21	GNMCL18F	40761	41272
21	GNMCL18R	39414	39980
21	GNMCL35F	58131	58677
21	GNMCL35R	56683	57252
21	GNMCM02F	77632	78241
21	GNMCM02R	76049	76774
21	GNMCM42F	44749	45453
21	GNMCM51F	70991	71600
21	GNMCM51R	72059	72786
21	GNMCM59F	46177	46805
21	GNMCM59R	47628	48296
21	GNMCM67F	58893	59524
21	GNMCM67R	57080	57810
21	GNMCN01F	29541	30134
21	GNMCN03R	26156	26805
21	GNMCN04F	27776	28333
21	GNMCN07F	3923	4589
21	GNMCN20F	23898	24435
21	GNMCN20R	22616	23262
21	GNMCN38R	27178	27843
21	GNMCN42F	28721	29325
21	GNMCN42R	27182	27579
21	GNMCN48F	31545	32275
21	GNMCN48R	30254	30829
21	GNMCN56F	38871	39524
21	GNMCN56R	37891	38510

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
21	GNMCN74R	76122	76780
21	GNMCN76F	76705	77420
21	GNMCN87F	81602	82267
21	GNMCN87R	80523	81067
21	GNMCO27F	12120	12686
21	GNMCO27R	10881	11581
21	GNMCO37R	5718	6188
21	GNMCO40F	81181	81884
21	GNMCO40R	80087	80888
21	GNMCO41F	64583	65184
21	GNMCO41R	63303	63895
21	GNMCO62F	24786	25412
21	GNMCO62R	23316	23927
21	GNMCO69F	29872	30526
21	GNMCO69R	28732	29381
21	GNMCP53R	42586	43118
21	GNMCP68F	17274	17781
21	GNMCP68R	18580	19168
21	GNMCP78F	20880	21383
21	GNMCP78R	22662	23004
21	GNMCQ50F	52354	53080
21	GNMCQ50R	53084	53813
21	GNMCQ56F	24974	25288
21	GNMCQ56R	26318	26936
21	GNMCQ76F	26247	26921
21	GNMCQ76R	27401	28002
21	GNMCQ86F	45276	45978
21	GNMCQ86R	46638	47384
21	GNMCS08F	7772	7922
21	GNMCS22F	49814	50311
21	GNMCS62F	56147	56850
21	GNMCS82F	1052	1732
21	GNMCW22F	55865	56223
21	GNMCX02R	45344	45988
21	GNMCX09F	6251	6931
21	GNMCX09R	4718	5291
21	GNMCX16F	60624	61395
21	GNMCX16R	59855	60393
21	GNMCX60F	40043	40437
21	GNMCX60R	41031	41715
21	GNMCX74F	59663	60376
21	GNMCX74R	58460	59136
21	GNMCY45F	42419	43108
21	GNMCY45R	44124	44642
21	GNMCY64F	58336	59059
21	GNMCY64R	57045	57582

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
21	GNMCZ28F	82973	83440
21	GNMCZ28R	81697	82250
21	GNMCZ46F	28043	28521
21	GNMCZ46R	26632	27064
21	GNMCZ77F	22158	22671
21	GNMCZ77R	23472	24017
22	GNMAA30F	2165	2683
22	GNMAA30R	3510	3980
22	GNMBA03F	25307	25874
22	GNMCB39F	5720	6103
22	GNMCB39R	3638	3945
22	GNMCK48F	14049	14546
22	GNMCK48R	12667	13251
22	GNMCL28F	17498	18022
22	GNMCL28R	16124	16700
22	GNMCM15R	284	872
22	GNMCN47R	4247	4891
22	GNMCO22F	9932	10637
22	GNMCO22R	11087	11794
22	GNMCO23F	10489	11080
22	GNMCO23R	11662	12303
22	GNMCQ04F	25363	26023
22	GNMCQ04R	24009	24693
22	GNMCS17F	5636	6187
22	GNMCS20F	21715	22271
22	GNMCV45F	11101	11552
22	GNMCV45R	12185	12992
22	GNMCV65F	21938	22388
22	GNMCW11F	21268	21882
22	GNMCZ08F	9245	9752
22	GNMCZ56R	4001	4481
22	GNMCZ57F	92	610
22	GNMCZ57R	1391	1949
23	GNMAA32R	501	916
24	GNMAA32F	34126	34644
24	GNMAA78F	12905	13389
24	GNMAA78R	11993	12173
24	GNMAA92F	5430	5906
24	GNMAA92R	6781	6979
24	GNMBA28F	25580	26147
24	GNMBA28R	24581	24744
24	GNMBA64F	44750	45281
24	GNMBA64R	43715	43924
24	GNMCA03F	47978	48229
24	GNMCA11F	5227	5845
24	GNMCB53F	31273	31860

Coordinates of Sequences Released in Contig			
Contig No.	Sequence Name	Coordinate	Coordinate
24	GNMCB53R	29840	30477
24	GNMCD60F	49318	49838
24	GNMCF28R	25897	26427
24	GNMCF33F	53784	54122
24	GNMCF33R	55250	55849
24	GNMCF55F	18332	18818
24	GNMCF55R	16870	17304
24	GNMCF88F	31085	31484
24	GNMCF88R	29803	30387
24	GNMCF94F	32330	32785
24	GNMCF94R	30474	31147
24	GNMCH39F	20353	21054
24	GNMCH71F	20501	20708
24	GNMCK74F	31152	31629
24	GNMCK74R	32458	33004
24	GNMCK94F	19578	20118
24	GNMCK94R	18388	18888
24	GNMCL74F	16135	16683
24	GNMCL74R	18348	18913
24	GNMCM07F	48543	49181
24	GNMCM07R	47427	48034
24	GNMCM72F	14887	15471
24	GNMCM72R	15789	16445
24	GNMCM88F	32288	32811
24	GNMCM88R	31171	31832
24	GNMCN14F	11430	12112
24	GNMCN14R	12286	12980
24	GNMCN59F	46864	47475
24	GNMCN59R	47935	48525
24	GNMCN60F	22771	23208
24	GNMCN60R	24288	24873
24	GNMCN91F	1684	2415
24	GNMCN91R	411	1022
24	GNMCO65F	4379	5044
24	GNMCO65R	5399	6070
24	GNMCO91F	54004	54574
24	GNMCO91R	55258	55838
24	GNMCP23F	21885	22586
24	GNMCP23R	20351	20912
24	GNMCP71F	53082	53612
24	GNMCP71R	54382	54958
24	GNMCQ33F	31360	32059
24	GNMCQ33R	30187	30816
24	GNMCS10F	52384	52999
24	GNMCS79R	9557	10245
24	GNMCV21F	13147	13602

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
24	GNMCV22R	14356	15028
24	GNMCV63F	11801	12250
24	GNMCV63R	12681	13494
24	GNMCV66F	53565	54040
24	GNMCV66R	52285	53073
24	GNMCV73R	42644	43443
24	GNMCV78F	23665	24161
24	GNMCV78R	24559	25362
24	GNMCX22F	8574	9293
24	GNMCX22R	9681	10320
24	GNMCX33F	23234	23994
24	GNMCX33R	21803	22176
24	GNMCX34F	23296	23994
24	GNMCX34R	21787	22355
24	GNMCX40F	28130	28866
24	GNMCX40R	29005	29697
24	GNMCX70F	10118	10635
24	GNMCX70R	11481	12043
24	GNMCX72F	27541	27741
24	GNMCY35F	32221	32765
24	GNMCY35R	31087	31546
24	GNMCY55F	45603	46359
24	GNMCY66R	2897	3449
24	GNMCY77F	29179	29866
24	GNMCY77R	27766	28254
24	GNMCY82F	9582	10184
24	GNMCY82R	11010	11421
24	GNMCY94F	6998	7520
24	GNMCY96F	22341	22994
24	GNMCY96R	23886	24294
24	GNMCZ37F	24346	24873
24	GNMCZ37R	23379	23953
25	GNMAA34F	450	701
25	GNMBA48F	4952	5519
25	GNMBA48R	4021	4222
25	GNMCA16F	14824	15438
25	GNMCB09F	22420	22990
25	GNMCB09R	23872	24453
25	GNMCD04F	2415	2961
25	GNMCD04R	1176	1633
25	GNMCK09F	3101	3667
25	GNMCK09R	4706	5009
25	GNMCK50F	8704	9235
25	GNMCK50R	10150	10511
25	GNMCM76R	3069	3807
25	GNMCM96F	13743	14447

Coordinates of Sequences Released in Contig			
Contig No.	Sequence Name	Coordinate	Coordinate
25	GNMCM96R	12253	12837
25	GNMCN04R	15105	15705
25	GNMCN05F	13789	14485
25	GNMCP16F	9455	10151
25	GNMCP16R	8452	9076
25	GNMCP62R	9951	10488
25	GNMCX61F	2023	2420
25	GNMCX61R	3150	3850
25	GNMCY04F	10846	11249
25	GNMCY04R	12073	12645
25	GNMCZ20F	13439	13952
25	GNMCZ20R	12311	12831
26	GNMAA37F	45118	45485
26	GNMAA37R	46181	46702
26	GNMAA44F	38832	39198
26	GNMAA44R	37483	37990
26	GNMBB25F	2584	3149
26	GNMBB25R	4308	4852
26	GNMCA28F	34335	34809
26	GNMCB61F	37080	37483
26	GNMCE76F	148	542
26	GNMCE76R	1633	1880
26	GNMCF66F	27879	28279
26	GNMCF66R	29423	30059
26	GNMCL21F	39439	39981
26	GNMCL21R	37698	38034
26	GNMCL69F	3548	4121
26	GNMCL69R	4207	4797
26	GNMCM34R	3940	4653
26	GNMCM89F	5891	6343
26	GNMCM89R	7010	7718
26	GNMCM92R	30750	31399
26	GNMCN54F	28683	29364
26	GNMCN54R	27207	27807
26	GNMCN79F	51540	52223
26	GNMCN79R	50402	50841
26	GNMCO14F	33740	34489
26	GNMCO14R	35347	36057
26	GNMCQ26F	47379	47982
26	GNMCQ26R	48736	49406
26	GNMCS81F	36588	37281
26	GNMCS88F	19142	19409
26	GNMCS89R	17251	18014
26	GNMCV32F	18038	18514
26	GNMCV33F	30470	30781
26	GNMCV33R	28683	29309

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
26	GNMCV70F	41545	42025
26	GNMCV70R	42579	43282
26	GNMCV76F	30234	30720
26	GNMCV76R	31359	32063
26	GNMCV86R	42591	43300
26	GNMCV87F	41330	41805
26	GNMCV87R	42509	43300
26	GNMCX26R	42058	42510
26	GNMCY31R	1275	1860
26	GNMCY86F	27767	28402
26	GNMCY86R	26306	26736
26	GNMCZ13F	23798	24317
26	GNMCZ13R	24994	25572
26	GNMCZ64F	26763	27169
26	GNMCZ64R	27996	28534
26	GNMCZ71F	47451	47955
26	GNMCZ71R	46061	46606
26	GNMCZ95R	8013	8499
26	GNMCZ96R	8005	8483
27	GNMAA41F	3036	3402
27	GNMAA41R	2156	2677
27	GNMAA65F	58776	59296
27	GNMAA65R	60307	60457
27	GNMAB83F	38177	38746
27	GNMAB83R	36806	37326
27	GNMAB86F	20818	21390
27	GNMAB86R	21914	22429
27	GNMAB92F	21743	22226
27	GNMBA25F	28880	29408
27	GNMBA25R	27506	28043
27	GNMBA49F	40184	40752
27	GNMCB28F	15988	16497
27	GNMCB28R	14642	15180
27	GNMCB30R	14648	14996
27	GNMCB35F	33768	34099
27	GNMCB35R	32048	32548
27	GNMCB37F	31837	32567
27	GNMCB37R	30832	31421
27	GNMCB58F	30329	31041
27	GNMCB58R	31809	32460
27	GNMCD63F	15824	16290
27	GNMCD79F	63644	64156
27	GNMCD79R	62110	62364
27	GNMCF64F	41517	41871
27	GNMCF84F	518	956
27	GNMCF84R	1834	2533

Coordinates of Sequences Released in Contig			
Contig No.	Sequence Name	Coordinate	Coordinate
27	GNMCF85F	6353	6815
27	GNMCF85R	7680	8383
27	GNMCH78F	22610	22938
27	GNMCH77F	22613	22953
27	GNMCK01F	62384	62733
27	GNMCK01R	60888	61415
27	GNMCK18F	66502	66987
27	GNMCK18R	65282	65724
27	GNMCK25F	27644	28213
27	GNMCK61F	32781	33107
27	GNMCK61R	30995	31329
27	GNMCK76F	19003	19542
27	GNMCK76R	17573	18122
27	GNMCK81F	61083	61511
27	GNMCK81R	59883	60445
27	GNMCK87F	36835	36998
27	GNMCK87R	34928	35498
27	GNMCL44F	38519	39001
27	GNMCL44R	37283	37883
27	GNMCL76F	49805	50300
27	GNMCL76R	48285	48854
27	GNMCM23F	27097	27789
27	GNMCM23R	25771	26483
27	GNMCN12F	8559	9239
27	GNMCN12R	7181	7752
27	GNMCN13F	68144	68833
27	GNMCN13R	66871	67384
27	GNMCN17F	36140	36815
27	GNMCN17R	35179	35753
27	GNMCN18F	55803	56488
27	GNMCN18R	54618	55229
27	GNMCN34F	59534	60268
27	GNMCN34R	19457	20056
27	GNMCN38F	17980	18719
27	GNMCN61F	18037	18594
27	GNMCN61R	19452	20056
27	GNMCN70F	32750	33421
27	GNMCN80R	37432	38115
27	GNMCN81F	38597	39329
27	GNMCN81R	37434	38096
27	GNMCO02R	59813	60549
27	GNMCO38F	51253	51930
27	GNMCO52R	33701	34400
27	GNMCO57F	37843	38489
27	GNMCO57R	36757	37320
27	GNMCP50F	7088	7522

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
27	GNMCP50R	5679	6058
27	GNMCQ93R	2933	3510
27	GNMCS49F	11768	12343
27	GNMCV50F	28795	29193
27	GNMCV50R	27644	28413
27	GNMCV85F	21568	22089
27	GNMCV85R	22559	23351
27	GNMCW02F	47088	47658
27	GNMCW24F	56091	56713
27	GNMCY27R	5455	5536
27	GNMCY33F	37884	38598
27	GNMCY33R	39134	39678
27	GNMCY62F	39794	40529
27	GNMCY62R	41156	41683
27	GNMCY63F	39843	40316
27	GNMCY72F	15711	16330
27	GNMCY72R	14681	15239
28	GNMAA45F	4450	4816
28	GNMAA54R	4273	4733
28	GNMCD82F	1790	2266
28	GNMCD82R	3389	3826
28	GNMCO78F	6645	7293
28	GNMCO86F	6688	7310
28	GNMCO86R	8039	8651
28	GNMCW05F	6711	7331
28	GNMCZ09F	13148	13623
28	GNMCZ09R	11925	12279
29	GNMAA47F	27107	27473
29	GNMAA47R	25852	26322
29	GNMAA71F	19984	20503
29	GNMAA71R	21408	21826
29	GNMAA80R	20918	21282
29	GNMAB31F	32769	33333
29	GNMAB31R	31525	31942
29	GNMAB77F	21439	22007
29	GNMAB77R	22335	22857
29	GNMCA22F	9411	10028
29	GNMCB74F	26713	27450
29	GNMCB74R	25839	26476
29	GNMCD08F	17015	17514
29	GNMCD31F	19776	20146
29	GNMCF43F	26320	26631
29	GNMCF43R	27361	28023
29	GNMCF87F	30819	31269
29	GNMCF87R	32125	32845
29	GNMCH41F	30939	31379

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
29	GNMCK20F	2703	3104
29	GNMCK20R	4020	4346
29	GNMCL02F	32166	32619
29	GNMCL02R	33533	33884
29	GNMCL12F	380	831
29	GNMCL12R	1490	2039
29	GNMCL73R	32823	33504
29	GNMCL85R	10881	11425
29	GNMCM77F	17717	18313
29	GNMCM77R	16440	17172
29	GNMCN64F	6192	6750
29	GNMCN64R	7430	8018
29	GNMCN68F	30002	30712
29	GNMCN83F	34059	34776
29	GNMCN83R	32873	33458
29	GNMCO28F	7197	7872
29	GNMCO28R	8396	9089
29	GNMCO53F	20633	21342
29	GNMCO53R	22061	22683
29	GNMCO67F	1523	2102
29	GNMCO67R	2871	3524
29	GNMCP82F	30881	31419
29	GNMCP82R	29550	30117
29	GNMCS26F	30683	31168
29	GNMCS90F	16067	16703
29	GNMCS91R	16949	17757
29	GNMCW09F	3770	4381
29	GNMCY19F	14037	14742
29	GNMCY89F	7491	8173
30	GNMAA48R	1027	1347
30	GNMAB21R	3808	4233
30	GNMCC90F	7658	8102
30	GNMCL10F	2942	3470
30	GNMCL10R	4319	4883
30	GNMCM64R	7645	8319
30	GNMCO63F	12259	12933
30	GNMCO63R	11104	11789
30	GNMCP58F	8513	9047
30	GNMCP58R	10322	10707
30	GNMCV03F	10383	10724
30	GNMCV04R	8992	9749
30	GNMCX06F	11346	12072
30	GNMCX06R	12784	13418
30	GNMCX18F	11968	12726
30	GNMCX18R	13547	14189
30	GNMCX71F	9073	9653

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
30	GNMCX71R	7669	8353
30	GNMCY15F	3214	3933
30	GNMCY15R	1508	2079
31	GNMAA49F	7079	7444
31	GNMAA49R	5738	6260
31	GNMBA38F	692	1262
31	GNMBA79F	7797	8387
31	GNMCL32F	3721	4184
31	GNMCL32R	2230	2815
31	GNMCN88F	1761	2482
31	GNMCN88R	3292	3892
31	GNMCQ51F	3285	3909
31	GNMCQ51R	4295	5012
31	GNMCX63R	7311	8010
31	GNMCY61R	4386	4868
31	GNMCY91F	2862	3456
32	GNMAA52F	1739	2107
32	GNMAA52R	2617	3138
32	GNMAA89F	13148	13666
32	GNMAB90F	5824	6192
32	GNMAB90R	6600	7118
32	GNMCF38F	3403	3878
32	GNMCF38R	4584	5237
32	GNMCK38F	6598	7143
32	GNMCK38R	5207	5792
32	GNMCP85F	6949	7473
32	GNMCP85R	5282	5869
32	GNMCQ07F	10995	11623
32	GNMCQ07R	12678	13358
32	GNMCV23F	5455	5912
32	GNMCV24R	4006	4751
32	GNMCX13F	9897	10671
32	GNMCX13R	8710	9345
32	GNMCX45F	3857	4557
32	GNMCX45R	2724	3424
32	GNMCX57F	6426	6642
32	GNMCX57R	6424	6642
32	GNMCY06F	10183	10812
32	GNMCY06R	9259	9808
33	GNMAA57F	2954	3324
33	GNMAA57R	1924	2445
33	GNMAB30F	5838	6402
33	GNMAB30R	4864	5193
33	GNMAB48F	8816	9381
33	GNMBA50F	7809	8374
33	GNMBA50R	6161	6686

Coordinates of Sequences Released in Contig			
Contig No.	Sequence Name	Coordinate	Coordinate
33	GNMCA25F	18305	18918
33	GNMCA80F	3189	3849
33	GNMCL88F	12841	13492
33	GNMCL88R	11484	12088
33	GNMCM57F	6934	7569
33	GNMCM57R	7814	8549
33	GNMCN49F	18037	18780
33	GNMCN49R	16729	17352
33	GNMCO54F	17815	18524
33	GNMCO54R	16974	17598
33	GNMCP59F	13173	13831
33	GNMCP59R	14688	15102
33	GNMCQ29F	13338	14038
33	GNMCQ29R	11988	12688
33	GNMCQ87F	5857	6847
33	GNMCQ87R	7354	7881
33	GNMCS47F	7736	8481
33	GNMCV30F	18040	18529
33	GNMCV31F	1808	2283
33	GNMCV31R	16473	17092
33	GNMCV32R	2897	3843
33	GNMCY12F	13832	14327
33	GNMCY12R	14891	15485
33	GNMCZ12F	14374	14880
33	GNMCZ12R	12879	13414
34	GNMAA59R	20271	20800
34	GNMAB63F	21584	22082
34	GNMAB87F	4234	4655
34	GNMAB93F	8137	8678
34	GNMAB93R	7021	7543
34	GNMBA28F	17728	18076
34	GNMBA31R	20426	20952
34	GNMBA60F	2998	3582
34	GNMBA60R	4887	5305
34	GNMBA89F	12688	13184
34	GNMBA89R	11336	11869
34	GNMBA90F	1863	2532
34	GNMBA90R	3410	3916
34	GNMBB10F	18931	19469
34	GNMBB10R	20494	20791
34	GNMCA73F	10776	11434
34	GNMCD09F	1576	2151
34	GNMCD09R	202	580
34	GNMCL40F	6504	7032
34	GNMCL40R	7906	8476
34	GNMCM41F	15257	15722

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
34	GNMCM41R	13646	14279
34	GNMCM84F	10143	10755
34	GNMCM84R	11418	12090
34	GNMCP65R	13124	13566
34	GNMCQ57F	1107	1637
34	GNMCQ57R	2550	3230
34	GNMCV15F	10810	11260
34	GNMCV16R	9522	10243
34	GNMCX35F	24683	25380
34	GNMCX35R	25964	26651
34	GNMCX48F	27078	27683
34	GNMCX48R	25636	26324
34	GNMCZ82R	4431	4970
35	GNMAA60R	9724	9928
35	GNMAA81R	42064	42495
35	GNMAB09F	29605	30171
35	GNMBA37F	1865	2426
35	GNMBA37R	755	1265
35	GNMCA66F	14095	14490
35	GNMCB95F	29548	30210
35	GNMCB95R	28364	28994
35	GNMCD41F	4298	4824
35	GNMCD41R	2980	3326
35	GNMCD49F	47011	47510
35	GNMCD49R	45671	46032
35	GNMCD52F	46968	47374
35	GNMCE13F	44763	45068
35	GNMCE13R	43656	44020
35	GNMCK86F	32959	33472
35	GNMCL94F	45671	46185
35	GNMCL94R	44388	44948
35	GNMCM08F	32206	32865
35	GNMCM08R	33769	34324
35	GNMCN16F	11716	12326
35	GNMCN16R	10117	10693
35	GNMCN33F	2863	3568
35	GNMCN33R	4337	4927
35	GNMCO11F	117	667
35	GNMCO11R	1479	2220
35	GNMCO20F	41254	41858
35	GNMCO20R	42840	43385
35	GNMCP03R	15135	15820
35	GNMCP33F	33871	34386
35	GNMCP33R	31902	32446
35	GNMCS31F	25024	25611
35	GNMCS80F	26013	26719

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
35	GNMCV20F	11142	11598
35	GNMCV21R	9547	10242
35	GNMCV41F	1508	1764
35	GNMCV41R	2983	3375
35	GNMCV46F	19148	19638
35	GNMCX37F	10287	10978
35	GNMCX75F	16758	17498
35	GNMCX75R	17915	18815
35	GNMCY38F	35286	36002
35	GNMCY38R	36447	37009
35	GNMCZ63F	17628	18139
35	GNMCZ63R	16308	16866
36	GNMAA61F	17639	18003
36	GNMAA61R	19148	19669
36	GNMAB14F	9325	9894
36	GNMAB14R	10480	10900
36	GNMAB23F	5098	5510
36	GNMAB23R	5999	6420
36	GNMBA04F	7545	8114
36	GNMBA04R	8552	9087
36	GNMCB81F	1908	2616
36	GNMCB81R	1189	1739
36	GNMCD86F	266	753
36	GNMCD86R	1917	2276
36	GNMCL29F	19188	19732
36	GNMCL46F	5977	6459
36	GNMCL46R	6855	7431
36	GNMCL71R	2286	2862
36	GNMCN74F	8750	9460
36	GNMCN76R	7557	8138
36	GNMCP37R	5055	5645
36	GNMCS39F	3380	4120
36	GNMCV57F	6730	7217
36	GNMCV57R	7760	8463
36	GNMCX54F	7658	7977
36	GNMCX54R	6197	6884
36	GNMCY85R	6699	7077
36	GNMCZ06F	17782	18302
36	GNMCZ73F	15242	15755
37	GNMAA64F	11674	12041
37	GNMAA64R	10619	11088
37	GNMAB25F	25946	26508
37	GNMAB25R	27013	27437
37	GNMAB32R	448	844
37	GNMAB89F	2515	3085
37	GNMAB89R	3403	3923

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
37	GNMAB91F	19524	19900
37	GNMAB91R	18389	18909
37	GNMCA84F	8988	9651
37	GNMCA92F	10174	10831
37	GNMCB13F	28388	28959
37	GNMCB44F	17203	17885
37	GNMCB44R	16050	16676
37	GNMCB72F	15012	15708
37	GNMCB72R	16365	16857
37	GNMCD32F	4633	5112
37	GNMCD32R	2775	3142
37	GNMCD34F	21613	22123
37	GNMCD34R	23152	23452
37	GNMCD43F	23745	24277
37	GNMCF03F	23267	23766
37	GNMCF03R	21815	22457
37	GNMCK16F	12575	13127
37	GNMCK69R	981	1281
37	GNMCL41F	4846	5357
37	GNMCL41R	6380	6932
37	GNMCM06R	17272	17986
37	GNMCM82F	14731	15358
37	GNMCM82R	15814	16507
37	GNMCQ08F	20211	20740
37	GNMCQ08R	18866	19521
37	GNMCQ59F	16099	16826
37	GNMCQ59R	15132	15853
37	GNMCS58F	16358	17054
37	GNMCV94F	21841	22327
37	GNMCV94R	20477	21267
37	GNMCX07F	25522	26245
37	GNMCX07R	26310	26960
37	GNMCX69F	10320	10866
37	GNMCX69R	11842	12449
37	GNMCX93F	7947	8360
37	GNMCX93R	6445	6970
37	GNMCY18F	10778	11193
37	GNMCY18R	9630	10203
37	GNMCY67F	26216	26689
37	GNMCY67R	24588	24992
37	GNMCZ87F	28035	28543
37	GNMCZ87R	26386	26930
38	GNMAA74F	185	702
38	GNMAB59F	370	710
38	GNMCM68F	512	991
39	GNMBA35F	3187	3756

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
39	GNMCL49F	518	1003
39	GNMCM19F	3839	4413
39	GNMCM19R	2735	3480
39	GNMCM68R	3717	4374
39	GNMCN15F	11	695
39	GNMCN15R	1589	2035
39	GNMCS14F	2485	3018
39	GNMCV29F	4010	4481
39	GNMCV30R	2821	3321
39	GNMCZ91F	4347	4839
39	GNMCZ91R	3070	3584
40	GNMAA75F	1483	2009
40	GNMBA84F	14749	15315
40	GNMBA84R	13039	13401
40	GNMBB27F	7031	7629
40	GNMBB27R	5877	6280
40	GNMCA65F	10805	11468
40	GNMCF01F	9583	10038
40	GNMCF01R	7689	8249
40	GNMCF52F	13448	13800
40	GNMCF52R	14807	15448
40	GNMCK41F	1322	1884
40	GNMCK41R	1	549
40	GNMCN01R	8084	8689
40	GNMCN02F	6573	7152
40	GNMCY39F	12214	12832
40	GNMCY39R	11377	11773
40	GNMCZ75F	4573	5040
40	GNMCZ75R	3272	3824
41	GNMAA82F	1944	2123
41	GNMAA82R	540	848
41	GNMCA09F	4155	4769
41	GNMCL45F	5831	6382
41	GNMCL45R	7014	7582
41	GNMCX84F	6407	7029
41	GNMCX84R	4937	5630
41	GNMCZ07F	753	1258
41	GNMCZ07R	2139	2681
42	GNMAA85F	33488	34005
42	GNMAA85R	34481	34906
42	GNMAB11F	27021	27587
42	GNMAB16F	16195	16762
42	GNMAB16R	17262	17683
42	GNMAB51F	32336	32901
42	GNMAB64F	9048	9478
42	GNMBA52F	25714	26279

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
42	GNMBA52R	26930	27429
42	GNMBA63F	25856	26418
42	GNMCA10F	9199	9803
42	GNMCA90F	12306	12957
42	GNMCD76F	43170	43607
42	GNMCD80F	25485	25983
42	GNMCD80R	24100	24472
42	GNMCD81F	25487	25981
42	GNMCF21F	42792	43250
42	GNMCF21R	43820	44488
42	GNMCF79F	19953	20412
42	GNMCF79R	18429	19107
42	GNMCH08F	10638	10983
42	GNMCH61F	35608	36017
42	GNMCK58F	11541	12006
42	GNMCK58R	13419	13981
42	GNMCM03R	37448	38182
42	GNMCM48F	1	622
42	GNMCM48R	1215	1878
42	GNMCO34F	11655	12379
42	GNMCO34R	10537	11201
42	GNMCO70R	39192	39848
42	GNMCO84F	24768	25509
42	GNMCO84R	24098	24770
42	GNMCP29F	40509	41019
42	GNMCP29R	38958	39359
42	GNMCQ60F	38032	38565
42	GNMCQ69F	8563	9122
42	GNMCQ69R	6981	7666
42	GNMCS69F	3213	3921
42	GNMCV25F	17625	18095
42	GNMCV26R	16021	16633
42	GNMCX46F	4775	5450
42	GNMCX46R	3438	4125
42	GNMCX88R	17104	17778
42	GNMCY37F	7223	7838
42	GNMCY37R	5827	6323
42	GNMCY69F	22213	22853
42	GNMCY69R	21279	21796
42	GNMCZ85F	19300	19813
43	GNMAA86F	5244	5760
43	GNMAA86R	4311	4783
43	GNMCS54F	3163	3797
43	GNMCV84F	1109	1600
43	GNMCV84R	2002	2781
44	GNMAA87F	26931	27447

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
44	GNMAA87R	27952	28381
44	GNMAA89F	6714	7230
44	GNMAA89R	8124	8276
44	GNMAB27F	4038	4603
44	GNMAB27R	4804	5327
44	GNMCD11F	4246	4813
44	GNMCD11R	5623	6146
44	GNMCQ17F	6327	7009
44	GNMCQ17R	7631	8317
44	GNMCQ67F	1410	2013
44	GNMCQ67R	2571	3281
44	GNMCS92F	21382	22037
44	GNMCS94R	22779	23479
44	GNMCS96F	22613	22986
44	GNMCX79F	14815	15344
44	GNMCX79R	16086	16760
44	GNMCZ44F	19312	19820
44	GNMCZ44R	20486	21049
45	GNMAA88F	3827	4313
45	GNMBA05F	7835	8403
45	GNMBA05R	6396	6824
45	GNMCZ39F	143	619
45	GNMCZ39R	1646	2114
46	GNMAA84F	5740	6254
46	GNMAA84R	6575	7044
46	GNMAB29F	659	1225
46	GNMAB29R	1871	2298
46	GNMAB78F	16523	16951
46	GNMAB78R	15145	15668
46	GNMCA05F	4467	5137
46	GNMCD25F	11261	11830
46	GNMCD25R	10053	10529
46	GNMCD45F	4725	5273
46	GNMCD45R	3455	3826
46	GNMCD72F	12772	13251
46	GNMCD72R	14201	14542
46	GNMCK45F	6680	7258
46	GNMCK45R	5280	5857
46	GNMCK53F	9283	9638
46	GNMCK53R	10581	11122
46	GNMCN62R	20058	20608
46	GNMCO72F	11911	12654
46	GNMCO72R	10592	11291
46	GNMCS38F	8266	8953
46	GNMCS50F	9604	10313
46	GNMCY09F	18777	19443

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
46	GNMCY09R	20339	20885
46	GNMCY48F	13317	14054
46	GNMCY48R	12373	12900
47	GNMAB03F	39285	39849
47	GNMAB03R	40395	40825
47	GNMAB57F	8125	8631
47	GNMAB62F	5129	5697
47	GNMAB72F	25957	26522
47	GNMAB72R	26812	27332
47	GNMBA39F	10581	11112
47	GNMBA39R	9272	9805
47	GNMBA68F	33182	33747
47	GNMBA68R	32098	32634
47	GNMBB31F	46909	47485
47	GNMBB31R	45477	45996
47	GNMCB64F	8634	9225
47	GNMCB64R	9880	10466
47	GNMCD39F	26389	26882
47	GNMCF18F	42096	42592
47	GNMCF18R	40473	41111
47	GNMCF47F	46147	46634
47	GNMCF47R	44893	45560
47	GNMCK29F	14259	14820
47	GNMCK29R	12913	13476
47	GNMCK33F	11732	12246
47	GNMCK33R	10377	10759
47	GNMCK51F	19259	19619
47	GNMCK51R	17899	18248
47	GNMCL24F	21022	21491
47	GNMCL24R	19374	19922
47	GNMCL66F	34263	34768
47	GNMCL66R	35478	36049
47	GNMCM30R	35959	36642
47	GNMCM37R	18280	18787
47	GNMCN36F	28250	28958
47	GNMCN73F	29393	30074
47	GNMCN73R	28267	28921
47	GNMCN93F	1262	1971
47	GNMCN93R	2446	2878
47	GNMCO45F	14719	15397
47	GNMCO45R	15952	16635
47	GNMCO49F	38118	38828
47	GNMCO49R	39315	39845
47	GNMCO60F	21461	22152
47	GNMCO60R	19964	20648
47	GNMCO83R	16405	17063

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
47	GNMCP08F	4600	5318
47	GNMCP08R	5704	6436
47	GNMCP12F	44482	45180
47	GNMCP12R	43247	43929
47	GNMCQ70F	28264	28919
47	GNMCQ70R	27232	27902
47	GNMCS78F	28111	28860
47	GNMCX52F	44094	44441
47	GNMCX52R	45425	46100
47	GNMCX73F	8582	9157
47	GNMCX73R	7456	8141
47	GNMCY08F	22073	22785
47	GNMCY08R	20965	21539
47	GNMCY17F	13457	14071
47	GNMCY17R	12199	12710
47	GNMCY60F	4726	5396
47	GNMCY60R	3394	3937
47	GNMCZ72F	26112	26584
47	GNMCZ72R	27111	27642
48	GNMAB10F	45864	46429
48	GNMAB10R	46823	47246
48	GNMAB26F	18205	18771
48	GNMAB26R	17068	17496
48	GNMAB46F	39600	40166
48	GNMAB71F	36266	36835
48	GNMAB71R	35583	35981
48	GNMBA10F	24081	24641
48	GNMBA10R	25627	26158
48	GNMCA01F	2669	3310
48	GNMCA69F	24907	25573
48	GNMCA77F	44240	44904
48	GNMCB68F	48529	49183
48	GNMCB68R	49751	50229
48	GNMCD05F	61093	61524
48	GNMCD05R	47029	47548
48	GNMCD24F	41436	41982
48	GNMCD24R	42664	43161
48	GNMCD70F	43366	43798
48	GNMCE06F	45703	46081
48	GNMCE07R	46605	47129
48	GNMCE90F	6380	6925
48	GNMCE90R	5283	5799
48	GNMCF24F	56963	57448
48	GNMCF24R	55581	56243
48	GNMCF70R	50946	51263
48	GNMCF93F	46705	47157

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
48	GNMCF93R	48122	48692
48	GNMCH40F	24168	24458
48	GNMCH64F	60688	61022
48	GNMCK08F	12988	13530
48	GNMCK08R	11548	12144
48	GNMCK31F	48379	48939
48	GNMCK31R	47177	47731
48	GNMCK46F	13297	13814
48	GNMCK46R	12071	12654
48	GNMCK56F	29433	29963
48	GNMCK56R	27927	28487
48	GNMCK70F	41792	42156
48	GNMCK70R	43324	43888
48	GNMCL05F	22552	23041
48	GNMCL05R	21742	22293
48	GNMCL61F	15321	15724
48	GNMCL61R	14006	14449
48	GNMCL86F	23803	24358
48	GNMCL86R	22389	22965
48	GNMCM40F	60172	60784
48	GNMCM40R	43992	44623
48	GNMCM49R	63033	63741
48	GNMCM60F	28595	29249
48	GNMCM60R	27285	27929
48	GNMCN95F	21768	22424
48	GNMCN96F	52482	53159
48	GNMCO12F	49771	50550
48	GNMCO12R	49060	49698
48	GNMCO76F	26934	27624
48	GNMCO76R	25392	26062
48	GNMCO90F	10121	10652
48	GNMCO90R	8744	9318
48	GNMCP81F	26207	26575
48	GNMCP81R	27441	28017
48	GNMCQ16R	1	661
48	GNMCQ36R	13779	14476
48	GNMCQ48F	44157	44770
48	GNMCQ48R	43032	43754
48	GNMCQ64F	12475	13200
48	GNMCQ66F	12668	13370
48	GNMCQ66R	13747	14472
48	GNMCQ89F	16922	17619
48	GNMCV06F	48695	49152
48	GNMCV07R	47510	48231
48	GNMCV11F	26723	27238
48	GNMCV12R	27836	28452

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
48	GNMCV18F	35744	36244
48	GNMCV19R	34455	35205
48	GNMCV82F	8278	8644
48	GNMCV82R	8280	8645
48	GNMCV96F	45980	46492
48	GNMCV96R	44480	45162
48	GNMCX28F	42846	43632
48	GNMCX28R	44120	44767
48	GNMCX29F	59233	59998
48	GNMCX29R	58344	58984
48	GNMCX42F	22170	22862
48	GNMCX42R	23577	24284
48	GNMCX50F	29838	30232
48	GNMCX50R	30953	31633
48	GNMCX80F	30031	30735
48	GNMCX80R	31536	32224
48	GNMCY70F	13009	13629
48	GNMCY70R	11725	12281
48	GNMCZ84R	4001	4533
49	GNMAB32F	401	684
50	GNMAB35F	17857	18274
50	GNMBA70F	14615	15180
50	GNMBA70R	15840	16383
50	GNMCB20R	20852	21453
50	GNMCB89F	12569	13223
50	GNMCB89R	14045	14508
50	GNMCF67F	4524	4879
50	GNMCF67R	3257	3858
50	GNMCH89F	19690	20140
50	GNMCH89R	18248	18535
50	GNMCK49F	20201	20665
50	GNMCK49R	18771	19287
50	GNMCM01F	2159	2770
50	GNMCM01R	708	1314
50	GNMCN41F	21893	22570
50	GNMCN41R	23128	23476
50	GNMCO04F	2174	2638
50	GNMCO04R	837	1541
50	GNMCO82F	16481	17139
50	GNMCO82R	17538	18219
50	GNMCP61F	13046	13330
50	GNMCP61R	14605	15154
50	GNMCS33F	27679	28393
50	GNMCV22F	21920	22410
50	GNMCV23R	20644	21389
50	GNMCV47F	17147	17659

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
50	GNMCV47R	18206	18900
50	GNMCV58R	1132	1905
50	GNMCV59R	1242	1814
50	GNMCX41F	3977	4725
50	GNMCX41R	5212	5916
50	GNMCY22F	22454	23103
50	GNMCY29R	22461	23008
50	GNMCY71F	10078	10646
50	GNMCY71R	9041	9543
50	GNMCZ52F	20698	21140
50	GNMCZ52R	22156	22569
50	GNMCZ94F	3890	4317
50	GNMCZ94R	5230	5743
50	GNMCZ95F	3902	4346
50	GNMCZ96F	3902	4346
51	GNMAB39F	5946	6511
51	GNMBA51F	8613	9139
51	GNMBA51R	6844	7329
51	GNMCL84F	7136	7509
51	GNMCL84R	8501	9072
51	GNMCO08R	979	1711
51	GNMCY10F	1194	1921
51	GNMCY10R	50	610
51	GNMCZ33F	3405	3947
51	GNMCZ33R	4668	5244
52	GNMAB40F	15814	16385
52	GNMCB93F	7437	8109
52	GNMCB93R	8732	9304
52	GNMCF69F	9103	9470
52	GNMCF69R	7871	8573
52	GNMCF92F	2901	3235
52	GNMCF92R	1359	2018
52	GNMCL51F	16830	17360
52	GNMCL51R	18234	18580
52	GNMCM61R	12794	13378
52	GNMCN24F	1	676
52	GNMCN24R	1452	2016
52	GNMCO31F	17039	17664
52	GNMCO31R	18187	18861
52	GNMCS05F	11540	12169
52	GNMCX49F	10221	10402
52	GNMCX49R	8569	9260
52	GNMCX96R	4202	4835
52	GNMCZ83F	11839	12349
52	GNMCZ83R	13065	13609
53	GNMAB50F	81	306

Coordinates of Sequences Released in Contig			
Contig No.	Sequence Name	Coordinate	Coordinate
54	GNMAB60F	4573	5141
54	GNMCD68F	258	750
55	GNMAB68F	1314	1623
55	GNMCB73F	3597	4318
55	GNMCB73R	5082	5844
55	GNMCM35F	3120	3883
55	GNMCM35R	2555	3288
55	GNMCX47F	5483	6201
55	GNMCX47R	4289	4982
55	GNMCY34F	5585	6305
56	GNMAB79R	1	248
57	GNMAB80F	19923	20432
57	GNMAB80R	21103	21624
57	GNMBA07F	14530	15093
57	GNMBA07R	15847	16378
57	GNMCB11R	30894	31243
57	GNMCB47F	29518	30234
57	GNMCB47R	28242	28891
57	GNMCD55F	32780	33171
57	GNMCE88F	13280	13679
57	GNMCE88R	14548	15037
57	GNMCF08F	16859	17358
57	GNMCF08R	15242	15921
57	GNMCF40F	18554	19027
57	GNMCF40R	19698	20385
57	GNMCF50F	20435	20910
57	GNMCF50R	21576	22262
57	GNMCF63F	30402	30884
57	GNMCF63R	28818	29412
57	GNMCF86R	32381	33020
57	GNMCK71F	8763	9100
57	GNMCK71R	10055	10613
57	GNMCL95F	3811	4223
57	GNMCL95R	2299	2801
57	GNMCN67F	20529	21203
57	GNMCN67R	19529	20102
57	GNMCP09F	2860	3520
57	GNMCP09R	1884	2615
57	GNMCP70F	17818	18104
57	GNMCP70R	18924	19511
57	GNMCP79F	8875	9372
57	GNMCP79R	10275	10855
57	GNMCQ41F	20359	21104
57	GNMCQ41R	19819	20345
57	GNMCQ44F	10270	10898
57	GNMCQ44R	11575	12244

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
57	GNMCS16F	20638	20868
57	GNMCS86F	30569	31248
57	GNMCV34F	21537	21988
57	GNMCY40F	20132	20855
57	GNMCY40R	19153	19716
57	GNMCY49R	26133	26607
57	GNMCY80F	8452	8787
57	GNMCY80R	6998	7416
57	GNMCY90F	19373	19846
57	GNMCZ43F	31206	31711
57	GNMCZ43R	32436	32921
58	GNMAB82F	9525	10095
58	GNMAB82R	8509	9029
58	GNMCO58R	15112	15768
58	GNMCY78R	3411	3857
58	GNMCY83F	11793	12472
58	GNMCY83R	10643	11053
59	GNMAB85F	2737	3302
59	GNMAB85R	1900	2305
59	GNMCO33F	2304	2941
59	GNMCO33R	1257	1881
59	GNMCX86F	2826	3461
59	GNMCX86R	1441	2128
59	GNMCZ32F	1619	2126
59	GNMCZ32R	2661	3195
60	GNMAB95F	13774	14279
60	GNMAB95R	15289	15810
60	GNMCA30F	937	1556
60	GNMCD44F	303	826
60	GNMCF04F	9775	10276
60	GNMCF04R	8305	8976
60	GNMCF90F	3862	4310
60	GNMCF90R	2510	3187
60	GNMCH28F	9435	9696
60	GNMCK30F	13554	14101
60	GNMCK30R	12158	12740
60	GNMCM05F	9295	9874
60	GNMCM05R	10879	11616
60	GNMCM55F	10074	10731
60	GNMCM55R	10796	11542
60	GNMCS87F	13103	13751
60	GNMCW39F	15206	15851
60	GNMCX55F	12701	12889
60	GNMCX55R	13822	14516
60	GNMCX62R	1554	2237
61	GNMBA06F	22890	23457

Coordinates of Sequences Released in Contigs			
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61	GNMBA06R	24229	24758
61	GNMCB04F	30159	30722
61	GNMCB04R	28612	28214
61	GNMCB21F	23862	24428
61	GNMCB21R	25186	25803
61	GNMCB63R	3783	4084
61	GNMCB86F	23284	23998
61	GNMCB86R	24021	24823
61	GNMCD18F	31187	31608
61	GNMCF95F	20692	21018
61	GNMCF95R	19232	19872
61	GNMCK40F	11307	11811
61	GNMCK65F	9007	9517
61	GNMCL04F	20077	20543
61	GNMCL04R	18687	19271
61	GNMCL20F	27988	28484
61	GNMCL20R	29257	29840
61	GNMCL22F	13417	13939
61	GNMCL22R	14872	15438
61	GNMCL29R	34192	34771
61	GNMCL53F	1518	2034
61	GNMCL53R	214	688
61	GNMCL90R	8315	8888
61	GNMCM65F	15441	16117
61	GNMCM65R	14289	14984
61	GNMCM71F	10516	11122
61	GNMCM71R	11703	12405
61	GNMCO61F	14512	15200
61	GNMCO61R	13255	13946
61	GNMCQ79F	15802	16644
61	GNMCQ79R	16726	17426
61	GNMCQ90F	2342	3073
61	GNMCQ90R	804	1426
61	GNMCQ95F	19188	19483
61	GNMCQ95R	20653	21277
61	GNMCS24F	19718	20379
61	GNMCS48F	18786	19366
61	GNMCV12F	30913	31415
61	GNMCV13R	31808	32632
61	GNMCY25F	25038	25729
61	GNMCY25R	26701	27270
62	GNMBA12F	7833	8334
62	GNMBA66F	8661	9232
62	GNMBA66R	9608	10138
62	GNMBB30F	3235	3799
62	GNMBB30R	4483	5016

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
62	GNMCB05F	4772	5096
62	GNMCB05R	6111	6717
62	GNMCD67F	7723	8233
62	GNMCF78F	3478	3931
62	GNMCM43F	12550	13285
62	GNMCM43R	11540	12127
62	GNMCP28F	3321	3756
62	GNMCP28R	1814	2235
62	GNMCP67F	2320	2824
62	GNMCP67R	3943	4497
62	GNMCV62F	8092	8582
62	GNMCV62R	9694	10487
62	GNMCX39F	7125	7796
62	GNMCX39R	5729	6265
62	GNMCZ55F	5209	5724
62	GNMCZ55R	3782	4320
62	GNMCZ76F	4455	4947
62	GNMCZ76R	3027	3553
63	GNMBA13F	14825	15391
63	GNMBA13R	13165	13703
63	GNMBA14F	12491	13059
63	GNMBA14R	13757	14281
63	GNMBA80F	12477	12855
63	GNMCB32F	472	756
63	GNMCD42F	20565	21089
63	GNMCF07F	13708	14215
63	GNMCF07R	12522	13201
63	GNMCK47F	10432	10931
63	GNMCK47R	9275	9813
63	GNMCK91R	9054	9617
63	GNMCN32F	16696	17346
63	GNMCN32R	17927	18521
63	GNMCS55F	1461	2208
63	GNMCX85R	14727	15427
63	GNMCZ11R	17115	17610
63	GNMCZ18F	1990	2479
63	GNMCZ18R	3109	3667
63	GNMCZ34F	13696	14216
63	GNMCZ34R	12451	13003
64	GNMBA27F	2420	2987
64	GNMBA27R	649	1182
64	GNMCK68F	8858	9142
64	GNMCN47F	8600	9323
64	GNMCQ47F	5300	5761
64	GNMCQ47R	3904	4632
64	GNMCZ45F	6005	6471

Coordinates of Sequences Released in Contig			
Contig No.	Sequence Name	Coordinate	Coordinate
64	GNMCZ45R	7509	8073
64	GNMCZ88F	6722	7164
65	GNMBA40F	9253	9800
65	GNMBA40R	7884	8418
65	GNMCK42F	8125	8438
65	GNMCK42R	9148	9679
65	GNMCK43F	14839	15388
65	GNMCK43R	13193	13745
65	GNMCM11R	2515	3180
65	GNMCO03F	4053	4557
65	GNMCO03R	5332	6065
65	GNMCO32F	10209	10877
65	GNMCO32R	11348	11993
65	GNMCO78R	1107	1782
65	GNMCQ10F	9012	9752
65	GNMCQ10R	10149	10831
65	GNMCQ36F	19	522
65	GNMCZ17F	1839	2369
65	GNMCZ17R	3149	3711
65	GNMCZ24R	3485	4030
65	GNMCZ50R	2017	2353
65	GNMCZ51F	3684	4187
65	GNMCZ51R	5218	5657
66	GNMBA45F	5980	6527
66	GNMBA45R	4417	4948
66	GNMBB01F	3553	4084
66	GNMBB01R	2030	2588
66	GNMCA23F	4257	4873
66	GNMCN50F	6431	7098
66	GNMCN50R	5020	5625
66	GNMCO46F	1783	2443
66	GNMCO46R	703	1195
66	GNMCQ15F	1788	2503
66	GNMCQ15R	984	1688
66	GNMCZ67F	1099	1592
66	GNMCZ67R	2554	3083
66	GNMCZ68F	1130	1584
67	GNMBA56R	828	1363
67	GNMCZ01F	1178	1497
67	GNMCZ01R	2672	3147
68	GNMBA58F	11648	12214
68	GNMBA58R	10145	10680
68	GNMBB14F	7180	7758
68	GNMBB14R	8579	9037
68	GNMCD71F	502	959
68	GNMCL54F	10328	10882

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
68	GNMCL54R	11852	12293
68	GNMCN39F	13282	13967
68	GNMCN39R	11911	12477
68	GNMCP34F	12249	12751
68	GNMCP34R	10521	11087
68	GNMCP74F	9533	10032
68	GNMCP74R	8395	8982
68	GNMCV35F	11085	11475
68	GNMCV35R	12496	12972
69	GNMBA67F	10755	11332
69	GNMBA67R	9691	10167
69	GNMCA68F	138	798
69	GNMCA95F	7720	8389
69	GNMCB19F	7635	8181
69	GNMCB62F	496	5465
69	GNMCB62R	6482	7170
69	GNMCD88F	6048	6548
69	GNMCD94F	10463	10960
69	GNMCD94R	12298	12546
70	GNMBA87F	8256	8675
70	GNMBA87R	6890	7365
70	GNMCA76F	9130	9792
70	GNMCB96F	10306	11006
70	GNMCB96R	11786	12359
70	GNMCD20F	2427	2973
70	GNMCD20R	3980	4417
70	GNMCE77F	10510	10866
70	GNMCF49F	13718	14204
70	GNMCF49R	11782	12414
70	GNMCF57F	24615	25081
70	GNMCF57R	23522	24203
70	GNMCF81R	14890	15469
70	GNMCK10F	32790	33342
70	GNMCL64F	2279	2735
70	GNMCL64R	1098	1594
70	GNMCM94F	15929	16589
70	GNMCM94R	16990	17708
70	GNMCO70F	6253	6962
70	GNMCP46F	28269	28572
70	GNMCP46R	29399	29799
70	GNMCP69R	14839	15383
70	GNMCQ60R	4262	4932
70	GNMCV71F	1570	2085
70	GNMCV71R	316	1151
70	GNMCV72F	29887	30336
70	GNMCV72R	28290	29022

Coordinates of Sequences Released in Contig			
Contig No.	Sequence Name	Coordinate	Coordinate
70	GNMCV79F	9283	9788
70	GNMCV79R	8344	8078
70	GNMCV90F	15008	15478
70	GNMCV90R	16482	17288
70	GNMCX43F	15135	15888
70	GNMCX43R	14040	14728
70	GNMCY28F	27547	28277
70	GNMCY28R	26648	27207
70	GNMCZ35F	32742	33250
71	GNMBB05F	1980	2525
71	GNMBB05R	3344	3515
71	GNMCQ43F	7880	8357
71	GNMCQ43R	8817	9224
71	GNMCV39F	3444	3908
71	GNMCV39R	1857	2637
71	GNMCV40R	1958	2698
71	GNMCX05F	7245	7867
71	GNMCX05R	9020	9558
71	GNMCY02F	11233	11831
71	GNMCY02R	10518	11074
71	GNMCZ22F	12188	12718
71	GNMCZ22R	10978	11535
71	GNMCZ62F	5934	6428
71	GNMCZ62R	7330	7740
72	GNMBB26F	8780	9327
72	GNMBB26R	7553	8088
72	GNMCA20F	13488	14085
72	GNMCA70F	3932	4598
72	GNMCA83F	16238	16703
72	GNMCD73F	16568	17077
72	GNMCD73R	15204	15432
72	GNMCF25F	16018	16451
72	GNMCF25R	14847	15268
72	GNMCM14R	10822	11348
72	GNMCS42F	5703	6424
72	GNMCS67F	9325	10028
72	GNMCS91F	3912	4620
72	GNMCY88F	1473	2157
73	GNMCA21F	82	738
73	GNMCA82F	3678	3975
73	GNMCL92F	4684	5205
73	GNMCL92R	5485	5880
73	GNMCM22R	708	1428
73	GNMCM28R	1847	2683
73	GNMCO16R	1657	2311
73	GNMCV93F	347	830

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
73	GNMCV93R	1879	2561
74	GNMCA78F	5557	6224
74	GNMCB76F	5584	6225
74	GNMCB76R	4398	4948
74	GNMCF14R	1573	2079
74	GNMCF30F	9638	10051
74	GNMCF30R	8180	8703
74	GNMCL96F	16170	16676
74	GNMCL96R	14728	15294
74	GNMCN51F	7918	8654
74	GNMCN51R	6999	7601
74	GNMCN65F	14177	14895
74	GNMCN65R	12918	13517
74	GNMCN66R	12940	13557
74	GNMCO71F	2786	3525
74	GNMCO71R	3980	4683
74	GNMCP02F	9531	10254
74	GNMCP02R	10574	11268
74	GNMCQ12F	1447	2032
74	GNMCQ12R	416	1065
74	GNMCV61F	12114	12501
74	GNMCV61R	10643	11335
74	GNMCX30F	18292	19013
74	GNMCX30R	20178	20810
74	GNMCX94F	21616	22251
74	GNMCX94R	20632	21246
74	GNMCY73R	13205	13774
74	GNMCZ16F	14762	15283
74	GNMCZ16R	13378	13933
74	GNMCZ19F	23465	23941
75	GNMCA94F	3978	4349
75	GNMCB55F	2185	2819
75	GNMCB55R	3259	3917
75	GNMCL13F	4716	5241
75	GNMCL13R	2852	3443
75	GNMCL80F	4341	4845
75	GNMCL80R	2903	3473
75	GNMCM78R	2146	2889
75	GNMCV07F	1	479
75	GNMCV08R	1221	1918
75	GNMCV10F	5011	5503
75	GNMCV11R	3483	4212
75	GNMCV36F	4495	4971
75	GNMCV36R	3285	3527
75	GNMCV52F	3868	4351
75	GNMCV52R	2491	3098

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
75	GNMCX78F	3135	3788
75	GNMCX78R	4397	5087
76	GNMCB02F	2418	2977
76	GNMCB02R	3352	3983
76	GNMCB07F	2418	2984
76	GNMCB07R	3352	3954
76	GNMCB12F	2418	2974
76	GNMCB12R	3314	3933
76	GNMCY54R	5129	5838
77	GNMCB54R	4435	4640
77	GNMCB85R	2747	3439
77	GNMCF72F	4480	4924
77	GNMCF72R	5933	6649
77	GNMCK68R	569	1128
77	GNMCM47F	3316	3922
77	GNMCM47R	4348	4995
77	GNMCX10F	6886	7627
77	GNMCX10R	5801	6436
77	GNMCZ08R	3508	3954
78	GNMCB60F	1387	2047
78	GNMCB60R	2757	3429
79	GNMCB65F	287	954
79	GNMCB65R	1598	2122
79	GNMCY11F	3301	4016
79	GNMCY11R	2339	2911
81	GNMCD15F	1	519
82	GNMCO75R	2040	2712
83	GNMCD53F	466	1013
84	GNMCF02F	1638	2132
85	GNMCF15F	3019	3523
85	GNMCF15R	1257	1932
85	GNMCY26F	1834	2612
85	GNMCY26R	555	1120
86	GNMCF34F	1880	2365
86	GNMCF34R	259	918
86	GNMCS21F	1678	2392
87	GNMCF36F	274	748
88	GNMCF71R	10636	11160
88	GNMCL78F	2657	3153
88	GNMCL78R	4103	4685
88	GNMCN10F	7355	8034
88	GNMCQ46F	10928	11579
88	GNMCQ46R	9882	10586
88	GNMCQ88F	574	1196
88	GNMCQ88R	2017	2549
89	GNMCF76F	1981	2406

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
89	GNMCF76R	1	500
89	GNMCF80F	920	1305
89	GNMCF80R	2032	2709
89	GNMCL16F	247	763
89	GNMCL16R	1226	1784
89	GNMCN80F	788	1493
89	GNMCQ82F	1969	2554
89	GNMCQ82R	401	1093
89	GNMCZ19R	2292	2850
123	GNMCH27F	119	501
145	GNMCP17R	991	1517
152	GNMCP17F	81	776
153	GNMCK10R	756	1346
153	GNMCS01F	823	1344
153	GNMCX08F	332	1001
153	GNMCX08R	1513	2144
153	GNMCZ35R	695	1204
154	GNMCK14R	1	352
155	GNMCK59R	1	445
156	GNMCK78F	8693	9133
156	GNMCM20F	2049	2694
156	GNMCM20R	632	1335
156	GNMCS15F	3468	4033
156	GNMCS66F	4788	5488
156	GNMCV01F	1890	2231
156	GNMCV02R	166	894
156	GNMCV68F	2538	3032
156	GNMCV68R	3475	4231
157	GNMCL11F	295	834
157	GNMCL11R	1294	1846
158	GNMCL30F	1756	2276
158	GNMCL30R	448	1028
158	GNMCV49R	4317	5164
159	GNMCL48F	5961	6264
159	GNMCL48R	4706	5280
159	GNMCQ61R	922	1535
159	GNMCS71F	314	1024
159	GNMCY32F	8722	9407
159	GNMCY32R	10063	10584
159	GNMCY51F	8917	9628
159	GNMCY51R	10406	10895
160	GNMCL58R	4560	5111
160	GNMCN05R	9955	10528
160	GNMCO37F	8602	9262
160	GNMCV04F	951	1370
160	GNMCV05R	1971	2742

Coordinates of Sequences Released in Contigs			
Contig No.	Sequence Name	Coordinate	Coordinate
161	GNMCN26F	4880	5549
161	GNMCN26R	3911	4533
161	GNMCQ77F	6238	6857
161	GNMCQ77R	5035	5760
161	GNMCZ58F	3859	4357
161	GNMCZ58R	2375	2916
162	GNMCN45F	1676	2346
162	GNMCN45R	400	977
163	GNMCN92F	507	1223
163	GNMCN92R	1454	2112
163	GNMCY42F	1142	1860
163	GNMCY42R	2736	3290
163	GNMCZ36F	4711	5225
163	GNMCZ36R	6070	6592
164	GNMCN94F	3000	3708
164	GNMCN94R	1705	2265
165	GNMCQ54F	51	677
165	GNMCQ54R	938	1639
166	GNMCS72F	19	432
166	GNMCS74R	1	181
167	GNMCV58F	314	808
167	GNMCZ38F	6858	7329
167	GNMCZ38R	5443	5996
168	GNMCX26F	1	660
169	GNMCX92F	341	587
170	GNMCY65R	195	567

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APPENDIX B

MenB ORFs

Number 1 ORF

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1  ..TTCCGGCGA CATCGGGCGGT TTGAAGGTCA ATGCCCCCGT CAAATCCGCA
51  GCGGTATTGG TCGGGGCGGT CGGCGCTATC GGACTTGACC CGAAATCCTA
101 TCAGGCGAGG GTGCGOCTCG ATTTGGACGG CAAGTATCAG TTCAGCAGCG
151 ACGTTTCCGC GCAAATCCTG ACTTCsGGAC TTTTGGGCGA GCAGTACATC
201 GGGCTGCAGC AGGGCGGCGA CACGGAAAAC CTTGCTGCOG GCGACACCAT
251 CTCGTAACC AGTTCGTCAA TGGTTCTGGA AAACCTTATC GGCAAATTCA
301 TGACGAGTTT TGCCGAGAAA AATGCCGACG GCGCAATGC GGAAAAAGCC
351 GCCGAATAA

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Number 2 ORF

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1  ..ATTTTGATAT ACCTCATCCG CAAGAATCTA GGTTCGCCCG TCTTCTTCTT
51  TCAGGAACGC CCCGGAAAGG ACGGAAAACC TTTTAAAATG GTCAAATTCC
101 GTTCCATGCG CGAOGGCTTG TATTCAGACG GCATTCCGCT GCCCGACGGA
151 GAACGCCTGA CACCGTTCGG CAAAAAATG CGTGCCGcCA GTwTGGACGA
201 ACTGCCTGAA TTATGGAATA TCTTAAAAGG CGAGATGAGC CTGGTCGGCC
251 CCCGCCCGCT GCTGATGCAA TATCTGCCCG TGTACGACAA CTTCCAAAAC
301 CGCGGCCACG AAATGAAACC CGGCATTACC GGCTGGGCGC AGGTCAACGG
351 GCGCAACGCg CTTTCTGGG ACGAAAAATT CGCCTGCGAT GTTTGGTATA
401 TCGACCACTT CAGCCTGTGC CTCGACATCA AAATCCTACT GCTGACGGTT
451 AAAAAAGTAT TAATCAAGGA AGGGATTTCC GCACAGGGCG AACA.aCCAT
501 GCCCCTTTC ACAGGAAAAC GCAAATCGC CGTCGTCGGT GCGGGCGGAC
551 ACGGAAAAGT CGTTGCCGAC CTTGCCGCGG CACTCGGCGG GTACAGGGAA
601 ATCGTTTTTC TGGACGACCG CGCACAAAGG AGCGTCAACG GCTTTTCCGT
651 CATCGGCACG ACGCTGCTGC TTGAAAACAG TTTATCGCCC GAACAATAG
701 ACGTCGCGT CGCCGTCGGC AACAACCGCA TCCGCGCCCA AATCGCCGAA
751 AAAGCCGCCG CGCTCGGCTT CGCCCTGCCG GTACTGGTTC ATCCGGACGC
801 GACCGTCTCG CCTTCTGCAA CAGTCGGACA AGGCAGCGTC GTTATGGOGA
851 AAGCGGTCG..

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Number 3 ORF

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1  ..AACCATATGG CGATTGTCAT CGACGAATAC GGCGGCACAT CCGGCTTGGT
51  CACCTTTGAA GACATCATCG AGCAAATCGT CGGCGAAATC GAAGACGAGT
101 TTGACGAAGA CGATAGCGCC GACAATATCC ATGCOGTTT TCAGACACAG
151 TGGCGCATCC ATGCAGCTAC CGAAATCGAA GACATCAACA CCTTCTTCGG
201 CACGGAATAC AGCATCGAAG AAGCCGACAC CATT.GGCGG CCTGGTCATT
251 CAAGAGTTGG GACATCTGCC CGTGCGCGGC GAAAAAGTCC TTATCGGCGG
301 TTTGCACTT ACCGTCGCAC GCGCCGACAA CGCCCGCCTG CATACGCTGA
351 TGGCGACCCG CGTGAAGTAA GC..... ACCGC CGTTTCTGCA
401 CAGTTTAG

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Number 4 ORF

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1  ATGCGCGGCG GCAGGCCGGA TTCCGTTACC GTGCAGATTA TCGAAGGTTT
51  GCGTTTTTCG CATATGAGGA AAGTCATCGA CGCAACGCCC GACATCGGAC
101 ACGACACCAA AGGCTGGAGC AATGAAAAC TGATGGCGGA AGTTGCGCCC
151 GATGCCTTCA GCGGCAATCC TGAAGGGCAG TTTTCCCCG ACAGCTACGA
201 AATCGATGCG GCGGCGAGTG ATTTGCAGAT TTACCAAACC GCCTACAAGG
251 GCGATGCAAC GCGCCTGAA TGAGGCGATG GGAAAGCAGG CAGGACGGGC
301 TGCCTTATAA AAACCTTAT GAAATGCTGA TTATGGCGAr CCTGGTCGAA
351 AAGGAAACAG GGCATGAAGC CGAsCsCGAC CATGTcGCTT CGTCTTCGT
401 CAACCGCCTG AAAATCGGTA TGCGCCTGCA AACCgAssCG TCCGTGATT

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-2-

451 ACGGCATGGG TGCGGCATAC AAGGGCAAAA TCCGTAAAGC CGACCTGGCG
 501 CGCGACACGC CGTACAACAC CTACACGGC GCGGTCCTGC CGCCAACCCC
 551 GATTGCGCTG CCC..

Number 5 ORF

1 CGTTTCAAAA TGTAACTGT GTTGACGGCA ACCTTGATTG CCGGACAGGT
 51 ATCTGCCGCC GGAGGCGGTG CGGGGGATAT GAAACAGCCG AAGGAAGTCG
 101 GAAAGGTTTT CAGAAAGCAG CAGCGTTACA GCGAGGAAGA AATCAAAAAC
 151 GAACGCGCAC GGCTTGCGGC AGTGGGOGAG CGGGTTAATC AGATATTTAC
 201 GTTGCTGGGA GGGGAAACCG CTTGCAAAA GGGGCAGGCG GGAACGGCTC
 251 TGGCAACCTA TATGCTGATG TTGGAACGCA CAAAATCCCC CGAAGTCGCC
 301 GAACGCGCCT TGGAAATGGC CGTGTGCTG AACGOGTTG AACAGGCGGA
 351 AATGATTAT CAGAAATGGC GGCAGATTGA GCCTATACCG GGTAAAGGCG
 401 AAAACGSGC GGGGTGGCTG CGGAACGTGC TGAGGGAAG AGGAAATCAG
 451 CATCTGACG GACGGGAAGA AGTGCTGGCT CAGGCGGACG AAGGACAG

Number 6 ORF

1 AACCTCTACG CCGGCCCGCA GACCACATCC GTCATCGCAA ACATCGCOGA
 51 CAACCTGCAA CTGGCCAAAG ACTACGGCAA AGTACACTGG TTCGCCTCCC
 101 CGCTCTCTG GCTCCTGAAC CAACTGCACA ACATCATCGG CAACTGGGGC
 151 TGGGCGATTA TCGTTTAAAC CATCATCGTC AAAGCCGTAC TGTATCCATT
 201 GACCAACGCC TCTTACGCT CTATGGCGAA AATGCGTGCC GCCGCACCCA
 251 AACTGCAAGC CATCAAAGAG AAATACGGCG ACGACOGTAT GCGCAACAA
 301 CAGGCGATGA TGCAGCTTCA CACAGACGAG AAAATCAACC CGCTGGGGG
 351 GCTGCCCTGC TATGCTGTTG CAAATCCCCG TCTTCATCGG ATTGTATTGG
 401 GCATTGTTCG CCTCGTAGA ATTGCGCCAG GCACCTTGGC TGGGTGGAT
 451 TACCGACCTC AGCCGCGCGG ACCCCTACTA CATCCTGCCC ATCATTATGG
 501 CGGCAACGAT GTTCGCCCAA ACTTATCTGA ACCCGCCGCC GACCGACCCG
 551 ATGCAGGCGA AAATGATGAA AATCATGCCG TTGGTTTCT CsGwCrTGT
 601 CTTCTTCTC CCTGCGGks TGGTATTGTA CTGGGTAGTC AACAACTCC
 651 TGACCATGCG CCAGCAATGG CACATCAACC GCAGCATCGA AAAACAACGG
 701 GCCCAAGGCG AAGTCGTTTC CTAA

Number 7 ORF

1 ..GCCGTCTTAA TCATCGAATT ATTGACGGGA ACGGTTTATC TTTTGGTTGT
 51 NAGCGCGGCT TTGGCGGGTT CGGGCATTGC TTACGGGCTG ACCGGCAGTA
 101 CGCCTGCGC CGTCTTGACC GNCGCTCTGC TTTCCGCGCT GGGTATTNG
 151 TTCGTACAG CCAAAACCGC CGTTAGAAAA GTTGAAACGG ATTCATATCA
 201 GGATTGGAT GCCGACAAT ATGTCGAAAT CCTCCGNCAC ACAGGCGGCA
 251 ACCGTTACGA AGTT.TTTAT CGCGGTACG. ACTGGCAGGC TCAAAATACG
 301 GGGCAAGAAG AGCTTGAACC AGGAACTCG GCCCTCATTG TCCGAAGGA
 351 AGGCAACCTT CTTATTATCA CACACCCTTA A

Number 8 ORF

1 ATGTWTGATT TCGGTTTrGG CGArCTGGTT TTGTGCGCA TTATCGCCCT
 51 GATWtCCTC GGCCCGGAAC GCsTGCCCGA GGCCGCCCGC AyCGCCGGAC
 101 GGcTCATCG CAGGCTGCAA CGCTTTGTG GcAGCGTCAA ACAGGAATTT
 151 GACACTCAA TCGAACTGGA AGAACTGAGG AAGGCAAAGC AGGAATTTGA
 201 AGCTGCCGcC GCTCAGGTTT GAGACAGCCT CAAAGAAACC GGTACGGATA
 251 TGGAAAGGCAA TCTGCACGAC ATTTCCGACG GTCTGAAGCC TTGGGAAAAA
 301 TGCCCGGAAC AGCGGACACC TGCCGATTTC GGTGTGGATG AAAACGGCAA
 351 TCCGCT.TCC CGATGCGGCA AACACCTAT CAGACGGCAT TTCCGAGGTT
 401 ATGCCGTC..

Number 9 ORF

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1 ATGCAAGCAC GGCTGCTGAT ACCTATTCTT TTTTCAGTTT TTATTTTATC
51 CGC.TGCGGG ACAC TGACAG GTATTCCATC GCATGGCGgA GkTAAACgCT
101 TTgCGGTGGA ACAAGAACTT GTGGCGGCTT CTGCCAGAGC TGCCGTTAAA
151 GACATGGATT TACAGGCATT ACACGGACGA AAAGTTGCAT TGTACATTGC
201 CACTATGGGC GACCAAGGTT CAGGcAGTTT GACAGGGGGG TCGCTACTCC
251 ATTGATGCAC kGrTwCstGG CGAATACATA AACAGCCCTG COGTCCGTAC
301 CGATTACACC TATCCAGTT ACGAAACCAC CSCTGAAACA ACATCAGGGG
351 GTTTGACAGG TTTAACCCTT TCTTTATCTA CACTTAATGC CCCTGCACTC
401 TCTGACACC AATCAGACGG TAGCGGAAGT AAAAGCAGTC TGGGCTTAAA
451 TATTGGCGGG ATGGGGGATT ATCGAAATGA AACCTTGACG ACTAACCCGC
501 GCGACACTGC CTTTCTTCC CACTTGGTAC AGACCGTATT TTTCTGCGC
551 GGCATAGACG TTGTTTCTCC TGCCAATGCC GATACAGATG TGTTTATTAA
601 CATCGACGTA TTCGGAACGA TACGCAACAG AACCGAAATG..

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Number 10 ORF

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1 ..GG.CAGCACA AAAACAGGC GGTGGAACGG AAAAACCGTA TTTACGATGA
51 TGCCGGGTAT GATATTCCGC GTATTACGG GCGCATCTC CGCAAAATAT
101 ATCCCCGGT TCGGGCTTCA AATTTCTTC ATCCTGTTTT TAACCGCGT
151 CGCATTCAAA AACTGCATA CCGACCTCA GACGGCATCC CGCCCGCTGC
201 CCGGACTGCC CgGACTGACT GCGGTTTCCA CACTGTTGG CACAATGTG
251 AGCTGGGTG GCATAGGCGG CGGTTCACTT TCCGTCCCT TCTTAATCCA
301 CTGCGGCTTC CCCGCCATA AAGCCATGG CACATCATCC GGCCTTGCT
351 GGCCGATTGC ACTCTCCGGC GCAATATCGT ATCTGCTCAA CGGCCTGAAT
401 ATTGCAGGAT TGCCCGAAG GTCACTGGGC TTCCTTTACC TGCCCGCGT
451 CGCCGTCTC AGCGCGGCAA CCATTGCCTT TGCCCGCTC GGTGTCAAA
501 CCGCCACAA ACTTCTTCT GCCAACTCA AAAAATC.TT CGGCATTATG
551 TTGCTTTTGA TTGCCGGAAA AATGCTGTAC AACCTGCTT AA

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Number 11 ORF

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1 ..GGAAACGGAT GGCAGGCAGA CCCCAGACAT CCGCTGCTCG GGCTTTTTG
51 CGTCAGTAAT GTATCGATGA CGCTTGCITT TGTCGGAATA TGTGCGTTG
101 TGCAATTATG CTTTTCGGGA ACGGTTCAAG TGTTTGTGT TGCGGCACTG
151 CTCAACTTT ATGCGCTGAA GCCGTTTAT TGGTTCGTGT TGCAGTTGT
201 GCTGATGGCG GTTGCTATG TCCACCGCTG CGGTATAGAC CGGCAGCCG
251 CGTCAACGT CGGCGGCTCG CAGCTGCGAC TCGGCGGGT GACGGCAGCG
301 TTGATGCAGG TCTCGGTACT GGTGCTGCTG CTTTCAGAAA TTGAAGATA
351 A

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Number 12 ORF

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1 ATGAAAACCC CACTCTCAA GCCTCTGCTN ATTACCTCGC TTCCGTTTT
51 CGCCAGTGT TTTACGCGG CCTCCATCGT CTGGCAGCTA GGCGAACCCA
101 AGCTCGCCAT GCCCTCGTA CTGGCATCA TCGCGGGGG CCTGTGCGAT
151 TTGGACAACC NCNTGACCG ACGGCTNAAA AACATCATCA CCACCGTCG
201 CCTGTTTACC CTCTCTCGC TCAGGCACA AAGCACCTC GGCACAGGGC
251 TGCCCTTCAT CCTCGCATG ACCGTATGA CTT.CG.CTT CACCATTTTA
301 GGCGCGGNCG ...

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Number 13 ORF

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1 ATGAATATGC TGGGAGCTTT GGCAAAAGTC GGCAGCCTGA CGATGGTGTG
51 GCGCGTTTTG GGATTGTGC GCGATACGGT CATTGCGCGG GCATTGCGG
101 CGGGTATGGC GACGGATGCG TTTTGTGCG CGTTCAACT GCCCAACCTG
151 CTTGCGCGG TGTGTGCGGA GGGGGGCTT SCCCAAGCGT TTGTGCGAT
201 TTTGGCGGAA TACAAGGAAA CGCGTTCAA AGAGGCGG.C GAAGCCTTTA
251 TCCGCCATGT GCGGGGATG CTGTGCTTTG TACTGTTAT CGTTACCGCG
301 CTGGGCATAC TTGCCGCGCC TTGGGTGATT TATGTTCCG CACCGAGTT

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351 TTGCCCAAGA TGCGACAAA TTTAGCTCT CCATCGATTT GCTGCGGATT
401 ACGTTTCCTT ATATATTATT GATTTCCTTG TCTTCATTGG TCGGCTCGGT
451 ACTCAATTCT TATCATAAGT TCGGCATTCC GCGGTTTACG CCAC.GTTTC
501 TGAACGTGTC GTTTATCGTA TTCGCGCTGT TTTTCGTGCC GTATTTCGAT
551 CCGCCCGTTA CCGCGCyGGC GTGGGCGGTC TTTGTCGGCG GCATTTTGCA
601 ACTCGmTTC CAACTGCCCT GGCTGGCGAA ACTGGGCTTT TTGAAACTGC
651 CCAAACTGAG TTTCAAAGAT GCGGCGGTCA ACCGCGTGAT GAAACAGATG
701 GCGCCTGCgA TTTTgGGCGT GAyCGTGGCG CAGGTTTCTT TGGTGATCAA
751 CACGATTTTc GCGTCTTATC TGCAATCGGG CAGCGTTTCA TGGATGTATT
801 ACGCGACCG CATGATGGAG CTGCCAGCG GCGTGCTGGG GGCGGCACTC
851 GGTACGATTT TGCTGCOGAC TTTGTCCAAA CACTCGGCAA ACCaAGATAC
901 GGaACAGTTT TCCGCCCTGC TCGACTGGGG TTTGCGCCTG TGCATGctgc
951 TGACGCTGCC GCGGgcGGTC GGACTGGCGG TGTGTCTGTT cCCgCtGGTG
1001 GCGACGCTGT TTAGTACCG CGWATTTACG CTGTTTGAOG CGCAGATGAC
1051 GCAACACCGG CTGATTGCCCT ATTCTTTCGG TTTAATCGGC TTAATCATGA
1101 TTAAAGTGTT GGCACCCGGC TTCTATGCGC GGCAAAACAT CAAwAmGCCC
1151 GTCAAAATCG CCATCTTCAC GCTCATCTGC mCGCAGTTGA TGAACCTTgs
1201 CTTTAYCGGC CCACTrAAC rCaTGGGAC TTTTCGCTTG CATCGGTCTG
1251 GCGCGGTGTA TCAATGCCGG ATTGTTGTTT TACCTGTTGC GCAGACACGG
1301 TATTACCAA CTTGG.CAAG GGTGGGCAG CGTTCTT.AG CAAAAATGCT
1351 GcTCTCGCTC GCCGTGA

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Number 14 ORF

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1 atGATTAAAA TCAAAAAAGG TCTAAACCTG CCCATCGCGG GCAGACCGGA
51 GCAAGCCGTT tACGACGGCC CGGCCaTTAC CGAAGtCGCG TTGCTTGGCG
101 AAGAATATGC CGGTATGCGC CCCTCGATGA AAGTCAAGGA AGGCGATGCC
151 GTcAAAAAAG GCCAAGTGCT GTTTGAAGAC AAAAAGAATC CGGGCGTGGT
201 GTTTACTGCG CCGGCTTCAG GcAAAATCGC CGCGATTAC CGTGGCGAAA
251 AGCGCGTACT TcAGTCAGTC GTGATTGCGG TTGAARcCAA CGACGAATC
301 GAGTTTGAAC GCTACGCACC TGAAGCGCTG GCAAACTTAA CCGGGCGAAGA
351 AGTGCGCCGC AACCTGATCC AATCCGGTTT GTGGACTGCG CTGCGCACCC
401 GTCCGTTcAG CAAAATTCTT GCCGTCGATG CCGAGCCGTT CGCCATCTTC
451 GTCAATGCGA tGGACACCAA TCCG..

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Number 15 ORF

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1 ..GCGnCGnAAA TCATCCATCC CC..nACGTC GTAGGCOCTG AAGCCAACTG
51 GTTTTTTATG GTAGCCAGTA CGTTTGTGAT TGCTTTGATT GGTTATTTTG
101 TTACTGAAAA AATCGTCGAA CGGCAATTGG GCCCTTATCA ATCAGATTTG
151 TCACAAGAAG AAAAAGACAT TCGGCATTCC AATGAAATCA CGCCTTTGGA
201 ATATAAAGGA TTAATTGGG CTGGCGTGGT GTTTGTTGCC TTATCGGCC
251 TATTGGCTTG GAGCATCGTC CCTGCCGACG GTATTTTGCG TCATCCTGAA
301 ACAGGATTGG TTTCCGGTTC GCCGTTTTTA AAATCGATTG TTGTTTTTAT
351 TTTCTTGTTG TTTGCACTGC CGGGCATTGT TTATGGCCGG GTAACCCGAA
401 GTTTGCGCGG CGAACAGGAA GTCGTTAATG CGmyGGCCGA ATCGATGAGT
451 ACTCTGGsGC TTTmTTTgsw CAkCATCTTT TTTGCCGCAC AGTTTGTGGC
501 ATTTTTTAAT TGGACGAATA TTGGGCAATA TATTGCCGTT AAAGGGGOGA
551 CGTTCCTTAA AGAAGTCGGC TTGGGCGGCA GCGTGTGTTT TATCGGTTTT
601 ATTTTAATTT GTGCTTTTAT CAATCTGATG ATAGGCTCOG CCTCOGCGCA
651 ATGGGCGGTA ACTGCGCGA TTTTCGTCCC TATGCTGATG TTGGCGGGCT
701 ACGCGCCCGA AGTCATTCAA GCCGCTTACC GCATCGGTGA TTCGTTACC
751 AATATTATTA CGCCGATGAT GAGTTATTTT GGGCTGATTA TGGCGACGGT
801 GrkCmmnTAC AAAAAAGATG CGGGCGTGGG TaCGcTGATT wCTATGATGT
851 TGCCGTATTG CGCTTCTTC TTGATTGCGT GGATTGOCCT ATTCTGATT
901 TGGGTATTTg TTTTGGGCTT GCCCGTCGGT CCGGCGCGCG CCACATTCTA
951 TCCCGCACCT TAA

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Number 16 ORF

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1 ..ACAGCCGGCG CAGCAGGTTn CnCGGTCTTC GTTTTCGTAA CGGACAGTCA
51 GGTGGAGGTG TTCGGGAACA TCCAGACCGC AGTGGAAACA GGTTTTTTTT

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101 ATGGCATTTC GGTTCGTCT GTGTTTGGTG CGGCGGCACA AGACTCGGCA
151 ATgGCTTCGC GCAGTGGCTC TATACCGGTA TTTTCAGCAA CGGAAATGCG
201 GACGGcGgCA ATTTTCCCG CAGCGTGGCG CCATATGCCG GTGTTTgTT
251 CTTcAGACGG CAGCAGGTCT GTTTTGTGT ACACCTTgAT GCACGGAAaTA
301 TCGCCGGCAT GGATTCTTG CAGTACGTTT TCCAGCTCTT CAATCTGCTG
351 TCGCTGTTC GGAGCGGGG CATCGACGAC GTGCAGCAGC ACATCgGcTT
401 gCGCGGTTTC TTCCAGCGTG GCgGAAAAGG CGGAAATCAG TTTgTGCGGC
451 agATyGCThA CGAATCCGAC GGTATCGGTC AGGATAATGC TGCATTGCGG
501 ACT..

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Number 17 ORF

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1 ..GGCCATTACT CCGACCGCAC TTGAAGCCG CGTTTGGNCG GCCGCGCTCT
51 GCGGTATCTG CTTTATGGCA CGCTGATTGC GGTATTGTG ATGATTTTGA
101 TGCCGAATC GGGCAGCTTC GGTTCGGCT ATGCGTCGCT GCGCGCTTTG
151 TCGTTCGGCG CGCTGATGAT TGCGCTGTTA GACGTGCTG CAAATATGGC
201 GATGCAGCCG TTAAAGATGA TGGTCGGCGA CATGGTCAAC GAGGAGCAGA
251 AAA.NTACGC CTACGGGATT CAAAGTTTCT TAGCAAATAC GGGCGCGGTC
301 GTGGCGGCGA TTCTGCCGTT TGTGTTTGGG TATATCGGTT TGGCGAACAC
351 CGCCGANAAA GCGTGTGTG CGCAGACCGT GGTGCTGGCG TTTTATGTGG
401 GTGCGGCGTT GCTGGTGATT ACCAGCGCGT TCACGATTTT CAAAGTGAAG
451 GAATACGANC CGGAAACCTA CGCCGTTAC CACGGCATCG ATGTCGCGCG
501 GAATCAGGAA AAAGCCAACT GGATCGCACT CTTAAAA.CC GCGC..

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Number 18 ORF

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1 ATGTTGTTCC GAAAAACGAC CGCCGCGGTT TTGGCGCATA CCTTGATGCT
51 GAACGGCTGT ACGTTGATGT TGTGGGGAAT GAACAACCCG GTCAGCGAAA
101 CAATCACCCG NAAACAGTT GNCAAAGACC AAATCCGN GN CTTGGGTGTG
151 GTTCCGAAG ACAATGCCCA ATTGGAAAAG GGCAGCCTGG TGATGATGGG
201 CGGAAAATAC TGGTTCGTG TCAATCCCGA AGATTCCGGC AA.NTGAOCG
251 GNATTTTGAN GGCAGGCTG GACAAACCTT TCCAAATAGT TNAGGATACC
301 CCGAGCTATG C.TGCCACCA AGCCCTGCCG GTCAAACCTG GATCGNCTGG
351 CAGCCAGAAT...

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Number 19 ORF

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1 ..GTCACTCCTG TACTGCCTAT TACACACGAA CGGACAGGGT TTGAAGGTGT
51 TATCGGTTAT GAAACCCATT TTTCAGGGCA CGGACATGAA GTACACAGTC
101 CGTTCGATCA TCATGATTCA AAAAGCACTT CTGATTTCAG CGGCGGTGTA
151 GACGGCGGTT TTAAGTTTCA CCAACTTCAT CGAACATGGT CGGAAATCCA
201 TCCGGAGGAT GAATATGACG GGCCGCAAGC AGCG.ATTAT CCGCCCCCGG
251 GAGGAGCAAG GGATATATAC AGCTATTATG TCAAAGGAAC TTCAACAAAA
301 ACAAGACTA GTATTGTCCC TCAAGCCCCA TTTTCAGACC GTTGCTAGA
351 AGAAATGCC GGTGCCGCT CTGGT..

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Number 20 ORF

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1 ATGAAAAAAC AAATCACCGC AGCCGTAATG ATGCTGTCTA TGATTGCCCC
51 CGCAATGGCA AACGGCTGG ACAATCAGGC ATTTGAAGAC CAAATGTTCC
101 ACACGCGGGC AGATGCACCG ATGCAG...

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Number 21 ORF

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1 ATGAATAAAA CTCTATATCG TGTAATTTTC AACCgCAAAC GTGGGGCTGT
51 GrTAGCCGTT GCTGAAACTA CCAAGCGCGA AGGTAAAAGC TGTGCCGATA
101 GTGATTcAGG CAGCGCTCAT GTGAAATCTG TTCCTTTTGG TACTACTCAT
151 GCACCTGTTT GTg.CGTTaC AAATATCTTT TCTTTTCTT TATTGGGCTT
201 TTCTTTATGT TTGGCTGTAG GtacGgyCAA TATTGCTTTT GCTGATGGCA

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251 TT..

Number 22 ORF

1 ATGAATACTC CTCCTTTTGT CTGTTGGATT TTTTGCAAGG TCATCGACAA
 51 TTTTCGGCGAC ATCGGCGTTT CGTGGCGGCT CGCCCGTGTG TTGCACCGCG
 101 AACTCGGTTG GCAGGTGCAT TTGTGGACGG ACGATGTGTC CGCCTTGCGT
 151 GCGCTTTGCC CTGATTGGCC CGATGTTCCC TCGGTTTCATC AGGATATTCA
 201 TGTCCGCACT TGGCATTCCG ATGCGGCAGA TATTGATACC GCG..

Number 23 ORF

1 ..TTGTTCTGTC GTGTNAAAGT GGGGCGTTT TTCAGCAGTC CGGCGAOGTG
 51 GTTTCGGGNC AAAGACCTG TAAATCAGGC GGTGTTGCGG CTGTATNCGG
 101 ACGAGTGGCG GCA.ACTTCG GTACGTTGGA AAATAGNCGC AACGTCGCAC
 151 AGCCTGTGGC TCTGCACGCT GCTCGGAATG CTGGTGTGCG TATTGTTGCT
 201 GCTTTTGGTG CGGCAATATA CGTTCAACTG GGAAGCACG CTGTTGAGCA
 251 ATGCCGCTTC GGTACGCGCG GTGGAAATGT TGGCATGGCT GCCGTCGAAA
 301 CTCGGTTTCC CTGTCCCGA TCGCGGTCG GTCATCGAAG GCCGTCGAA
 351 CGGCAATATT GCCGATGCGC GGGCTTGGTC GGGGCTGCTG GTCGNCAGTA
 401 TCGCTGCTA NGGCATCCTG CCGCGCTG..

Number 24 ORF

1 ..CAGAAGAGTT TGTCGAGAAT TTCTTTATGG GGTGTTGGCG GCGTGTITTT
 51 CGGGGTGTCC GGTCTGGTAT GGTTTTCTTT GGGCGTTTCT TT.GAGTGCG
 101 CCTGTTTTTC GGGTGTITCT TTTTCGGGTT CGGGACGGGG GACGTTTGTG
 151 GGCAGTACGG GGGTTTCTTT GAGTGTGTTT TCAGCTTGTG TTCC.GGCGT
 201 CGTCCGGCTG CCTGTCGGTT TGAGCTGTGT CCGCAGGTTG CG..GTTGA
 251 CCGGTTTTTT CTGGGGTGGC GCAGGGGACG TCATTCTCCT GCCGCTTTCG
 301 TCTGTGCCGT CCGGCTGTGC GGGTTCGGAT GAGGCGGCGT GGTGGTGTTC
 351 GGGTTGGGCG GCATCTTGT CCGACTACGC CGTTTGGCAG CCAGAATTCTG
 401 GTTTCGCGGG GGCTGTGGT GTGTGCGGT TCGGCTTGAA GGGTTTGTGTC
 451 GTCC..

Number 25 ORF

1 ATGAAAACCT TCTTCAAAC CCTTTCCGCC GCCGCACTCG CGCTCATCCT
 51 CGCCGCTGCG GGATT.CAAA AAGACAGCGC GCCCGCCGA TCCGCTTCTG
 101 CCGCCGCCGA CAACGGCGCG GCGTAAAAA GAAATCGTCT TCGGCACGAC
 151 CGTCGCGGAC TTCGGCGATA TGGTCAAAGA ACAATCCAA GCCGAGCTGG
 201 AGAAAAAAGG CTACCCGTC AAATGGTTCG AGTTTACCGA CTATGTAGCG
 251 CCGAATCTGG CATGGCTGA GGGCGAGTTG

Number 26 ORF

1 CCTCGTCGTC CTCGGCATGC TCCAGTTTCA AGGGGCGATT TACTCCAAGG
 51 CGGTGGAACG TATGCTCGGC ACGGTCATCG GGCTGGGCGC GGGTTTGGGC
 101 GTTTTATGGC TGAACCAGCA TTATTTCCAC GGCAACCTCC TCTTCTACCT
 151 CACCGTCGGC ACGGCAAGCG CACTGGCCGG CTGGGCGGCG GTCGGCAAAA
 201 ACGGCTACGT CCTmTGCTG GCAGGGCTGA CGATGTGTAT GCTCATCGGC
 251 GACAAACGGCA GCGAATGGCT CGACAGCGGA CTCATGCGCG CCATGAACGT
 301 CCTCATCGGC GyGGCCATCG CCATGCGCGC CGCCAAACTG CTGCOGCTGA
 351 AATCCACACT GATGTGGCGT TTCTGCTTG CCGACAACCT GGCCGACTGC
 401 AGCAAAATGA TTGCCGAAAT CAGCAACGGC AGGCGCATGA CCCGCGAAGC
 451 CCTCGAGGAG AACATGGCGA AAATGCGCCA AATCAACGCA CGCATGGTCA
 501 AAAGCCGCGC CCACTCTGCC GCCACATCGG GCGAAAGCTG CATCAGCCOC
 551 GCCATGATGG AAGCCATGCA GCACGCCAC CGTAAATCG TCAACACCAC
 601 CGAGCTGCTC CTGACCACCG CCGCAAGCT GCAATCTCCC AAATCAACG

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651 GCAGCGAAAT CCGGCTGCTT GACCGCCACT TCACACTGCT CCAAAC....
 701 GC AGACACGCCC GCCGCATCOG
 751 CATCGACACC GCCATCAACC CCGAACTGGA AGCCCTCGCC GAACACCTCC
 801 ACTACCAATG GCAGGGCTTC CTCTGGCTCA GCACCGATAT GCGTCAGGAA
 851 ATTTCCGCCC TCGTCATCCT GCTGCAACGC ACCCGCCGCA AATGGCTGGA
 901 TGCCACGAA CGCCAACACC TGCGCCAAAG CCTGCTTGA

Number 27 ORF

1 GAAATCAGCC TGCGGTCCGA CNACAGGCCG GTTTCOGTGN CGAAGCGGCG
 51 GGATTCGGAA CGTTTCTGCG TGTTGGAOGG CGGCAACAGC CGGCTCAAGT
 101 GGGCGTGGGT GGAACACGGC ACGTTCGCAA CCGTCGGTAG CGCGCGGTAC
 151 CGCGATTGT CGCCTTTGGG CGCGGAGTGG GCGGAAAAGG CGGATGGAAA
 201 TGTCGCAATC GTCGGTTGCG CTGTGTGCGG AGAATTCAAA AAGGCACAAG
 251 TGCAGGAACA GCTCGGCCGA AAAATCGAGT GGCTGCGGTC TTCCGCACAG
 301 GCTTT.GGCA TACGCAACCA CTACCGCCAC CCCGAGAAC ACGGTTCCGA
 351 CGCTGCTTC AACGCCTTGG GCAGCGCCCG CTTAGCGCGC AACGCCTGCG
 401 TCGTCGTGAG TTGCGGCACG GCGGTAACGG TTGACGCGCT CACCGATGAC
 451 GGACATTATC TCGGAGA.GG AACCATCATG CCCGGTTTCC ACCTGATGAA
 501 AGAATCGCTC GCCGTCCGAA CCGCCAACCT CAACCGGCAC GCCGGTAAGC
 551 GTTATCCTTT CCCGACGG..

Number 28 ORF

1 ATGTTTTACC AAATCCTTGC CCTGATTATC TGGAGCAGCT CGTTTATTGC
 51 CGCCAAATAT GTCTATGGCG GCATCGATCC CGCATTGATG GTCGGCGTGC
 101 GCCTGCTAAT TGCCGCGCTG CCTGCACTGC CCGCCTGCCG CGTCATGTG
 151 GGCAAGATTG CGCGTGAGGA ATGGAAGCCG TTGCTGATTG TGTCGTTCTG
 201 CAACTATGTG CTGACCTGCG TGCTTCAGTT TGTCGGGTTG AAATACACTT
 251 CCGCCGCCAG CGCATCGGTC ATTGTGCGAC TCGAGCCGCT GCTGATGGTG
 301 TTTGTGCGAC ACTTTTCTT CAACGACAAA GCGCGTGCCT ACCACTGGAT
 351 ATGCGGCGCG GCGGCATTG CCGGTGTGCG GCTGCTGATG GCGGGCGGTT
 401 CGGaAGAGGG CCGCGaAGTC GGCTGTTTGG GCTGCTGCTT GGTGTTGTTG
 451 GCGGGCGCGG GCTTTTGTGC CGCTATGCGT CCGACGCAAA GGCTGATTGC
 501 ACGCATCGGC GCACCGGCAT TCACATCTGT TTCCATTGCC GCGCATCGT
 551 TGATGTGCTT GCCGTTTTGG CTTGCTTTGG CGCAAAGTTA TACCGTGGAC
 601 TGGAGCGTCG GGATGTTATT GTGCTGCTG TATTTGGGTT TGGGGTGC..

Number 29 ORF

1 ATGCGCCGTT TTCTACCGAT CGCAGCCATA TGCGCmGwms TCCTGkkGTA
 51 sGGACTGAGC GCGGCAACCG GCAGCACCAG TTGCTGCGG GATTATTTCT
 101 GGTGGATTGT TGCGTTTACG GCAATGCTGC TGCTGGTGTG GTCCGCCGTT
 151 TTGGCACGTT ATGTCATATT GCTGTTGAAA GACAGGCGCG ACGGCGTATT
 201 CGGTTCCGta srTyGCCAAA gsGCCTgkks TGGG.ATGT TACGCTGGTT
 251 GCCGkACTGC CCGGCGTGT TCTGTTCCGGC TTTCCCGCAC AGTTCATCAA
 301 CGGCACGATT AATTCGTGGT TCGGCAACGA TACCCACGAG GCGCTTGAAC
 351 GCAGCCTCAA TTTGAGCAAG TCCGCATTGA ATTTGGCGGC AGACAACGCC
 401 CTCGGCAACG CCGTCCCGT GCAGATAGAC CTCATOGGCG CGGCTTCCCT
 451 GCCCGGGGAT ATGGGCAGGG TGCTGGAACA TTACGCGGCG AGCGGTTTTG
 501 CCCAGCTTGC CCTGTACAay ksCGCAAGCG GCAAAATCGA AAAAAGCATC
 551 AACCGCACa AGCTCGATCA GCGGTTTCCA GGTAAAGGCG GTTGGGAaAa
 601 AATCCaACGG GCGGGTTCGG TCAGGGATTG GGAAGCATA GGCGGCGTAT
 651 TGTaCGGCA GGGCTGGCTG TCGCGGGGTA CGCACwACGG GCGCGATTAC
 701 GCCTTGTTTT TCCGTCAGCC GGTTCCTCAA GCGGTGGCAG AGGATGCCGT
 751 yTTAATCGAA AAGGCAAGGG CGAAATATGC TGAGTTGAGT TACAGCAAAA
 801 AAGGTTTGCA GACCTTTTTC CTGGCAACCC TGCTGATTGC CTCGCTGCTG
 851 TCGATTTTTC TTGCACTGGT CATGGCACTG TATTTGCGCC GCGGTTTCGT
 901 CGAACCCGTC CTATCGCTTG CCGAGGGGGC GAAGGCGGTT GCGCAAGGCG
 951 ATTTAGCCA GACGCGCCCC GTGTTGCGCA ACGACGAGTT CGGACGCTTG
 1001 ACCAiGTTGT TCAACCACAT GACCGAGCAG CTTTCCATCG CCAAAGATGC
 1051 AGACGAGCGC AACCGCGCGC GCGAGGAAGC CGCCAGGCAT TATCTTGAAT

1101 GCGTGTGGA GGGGCTGACC ACGGGCGTGG TGGTGTGGA CGAACAAAGGC
 1151 TGTCTGAAAA CCTTCAACAA AGCGGCGGGT ACC..

Number 30 ORF

1 ATGTACGCAT TTACCGCCGC ACAGCAACAG AAGGCACTCT TCCGGCTGGT
 51 GCTTTTTCAT ATCCTCATCA TCGCCGCCAG CAACTATCTG GTGCAGTTC
 101 CTTTCCAAAT TTTCGGCATC CACACCACTT GGGGCGCATT TTCCTTTCC
 151 TTCACTCTCC TTGCCACCGA CCTGACCGTC CGCATTTTCG GTTCTCACTT
 201 GGCACGGCGG ATTATCTTTT GGGTGATGTT CCCCGCCCTT TTGCTTTCT
 251 ACGTCTTTTC CGTTTGTTC CACAACGGCA GTTGGACAGG CTTGGGCGCG
 301 CTGTCCGAAT TCAACACCTT TGTCCGACGC ATCGCCTTAG CCAGCTTTGC
 351 CGCCTACGCG ATCGGACAAA TCCTTGATAT TTTTGTATTC AACAAATTAC
 401 GCCGTCTGAA AGCGTGGTGG ATTGCACCGA ACGCATCAAC CGTCATCGGG
 451 CACGCGTTGG ATACG...

Number 31 ORF

1 ATGTCATAA AATATACAAA TTTGAATTTT GCGAAATTGT CGATAATTGC
 51 AATTTTGATG ATGTATTGCT TTGAAGCGAA TGCAAyGCA GTmwlAATAT
 101 CTGAAACTGT TTCAGTTGAT ACCGGACAAG GTGCGAAAT TCATAAGTTT
 151 GTACCTAAAA ATAGTAAAC TTATTCATCT GATTTAATAA AAACGGTAGA
 201 TTTAACACAC AyyCCTACGG GCGCAAAAGC CCGAATCAAC GCCAAAATAA
 251 CCGCCAGCGT ATCCGCGGCC GGCCTATTGG CGGGGGTCCG CAAACTTGCC
 301 CGCTTAGCG CGAAATTCAG CACAAGGGCG GTtCCCTATG TCGGAACAGC
 351 CcTTTtagcc CACGACGTAT ACGAAcTTT CAAAGAAGAC ATACAGGCAC
 401 GAGGCTACCA ATACGACCCC GAAACCGACA AATTTGTAAA AGGCTACGAA
 451 TATAGTAATT GCCTTTGGTA CGAAGACAAA AGACGTATTA ATAGAACCTA
 501 TGGCTGCTAC GGCCTTGAT..

Number 32 ORF

1 ATGAGATTTT TCGGTATCGG TTTTGTGGTG CTGCTGTTTT TGGAGATTAT
 51 GTCGATTGTG TGGGTTGCCG ATTGGCTGGG CGGCGGCTGG ACGTTGTTTT
 101 TGATGGCGGC AGGTTTGGCC GCCGGCGTGC TGATGCTCAG GCAAACCGGG
 151 GCTGACCGGT CTTTATTGG CGGCGGGC AATGAGAAGC GCGGGGAAGG
 201 TATCCGTTTA TCAGATGTTG TGGCCTATC..

Number 33 ORF

1 ATGTTTGTGTT TTCAGACGGC ATTCTT.ATG TTTCAGAAAC ATTTGCAGAA
 51 AGCCTCCGAC AGCGTCGTCG GAGGGACATT ATACGTGGTT GCCACGOCOA
 101 TCGGCAATTT GCGCGACATT ACCCTGCGCG CTTTGGCGGT ATTGCAAAG
 151 GCG..... .GCGA AGACACGGCG GTTACCGCAC AGCTTTTGAG
 201 CGCGTACGGC ATTCAAGGCA AACTCGTCAG TGTGCGCGAA CACAACGAAC
 251 GGCAGATGGC GGACAAGATT GTCGGCTATC TTTCAGACGG CATGGTTGTG
 301 GCACAGGTTT CCGATGCGGG TACGCCGGCC GTGTGCGACC CGGGCGCGAA
 351 ACTCGCCGCG CGCGTGCGTG AGGCCGGGTT TAAAGTCGTT CCCGTCGTGG
 401 GCGCAAC.GC GGTGATGGCG GCTTTGAGCG TGGCCGGTGT GGAAGGATCC
 451 GATTTTATT TCAACGGTTT TGTACCGCG AAATCGGGAG AACGCAGGAA
 501 ACTGTTTGCC AAATGGGTGC GGGCGGGGTT TCCTATCGTC ATGTTTGAAA
 551 CGCCGACCG CATCGGTGCA GCGCTTGCG ATATGGCGGA ACTGTTCCOC
 601 GAACGCCGAT TAATGCTGGC GCGCGAAATT ACGAAAACGT TTGAAACGTT
 651 CTTAAGCGGC ACGGTTGGGG AAATTCAAGC GGCATTGTCT GCCGACGGCG
 701 ACCAATCGCG CGGCGAGATG GTGTTGGTGC TTTATCCGGC GCAGGATGAA
 751 AAACACGAAG GCTTGTCGCA GTCGCGCAA AACATCATGA AAATCCTCAC
 801 AGCCGAGCTG CCGACCAAAC AGGCGGCGGA GCTTGCTGCC AAAATCACGG
 851 GCGAGGGAAA GAAAGCTTTG TACGAT..

Number 34 ORF

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1 ATGAAACAGA AAAAAACCGC TGCCGCAGTT ATTGCTGCAA TGTGGCAGG
51 TTTTGGCGCA GC.AAAGCAC CCGAATCGA CCGGCTTTG .....
//
651 ..... ..GAGTTGG TCAGAAACCA GTTGGAGCAG GGTTTGAGAC
701 AGGAAAAAGC CCGCTTGAAA ATCGATGCCC TTTTGGGAAGA AAACGGTGTC
751 AAACCGTAA

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Number 35 ORF

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1 ATGAAAAAAT CTTTCCTTAC GCTTGTCTG TATTGCTCTT TACTTACCGC
51 CAGCGAAATT GCCTTACCCC TTGGAATTGG GGATTGAAAC CTTACCGGGC
101 GCAAAAATTG CCGAAACGTT TGCGCTGACA TTTGTGATTG CTGCGCTGTA
151 TCTGTTTGGC CGTAATAAGG TGACGCGTTT GTTGATTGCG GTGTTTTTTG
201 CGTTCAGCAT TATTGCCAAC AATGTGCATT ACGCGGATTA TCAAAGCTGG
251 ATGACG.... //
1201 ..... CAAACCGTAT TCGAGCAGCT GCAAAAGACT CCTGACGGCA
1251 ACTGGCTGTT TGCCTATACC TCCGATCATG GCCAGTATGT TCGCCAAGAT
1301 ATCTACAATC AAGGCACGGT GCAGCCCGAC AGCTATCTCG TGCCGCTAGT
1351 GTTGACAGC CCGGATAAGG CCGTGCAACA GGCTGCCAAC CAGGCTTTTG
1401 CGCCTTGCGA GATTGCCTTC CATCAGCAGC TTTCAACGTT CCTGATTAC
1451 ACGTTGGGCT ACGATATGCC GGTTCAGGT TGTGCGAAG GCTCGGTAAC
1501 GGGCAACCTG ATTACGGGTG ATGCAGGCAG CTTGAACATT CGCGACGGCA
1551 AGGCGGAATA TGTATTATCCG CAATGA

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Number 36 ORF

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1 ...ACCCTGCTCC TCTTCATCCC CCTCGTCCTC ACAC.GTGCG GCACACTGAC
51 CGGCATACTC GCCCAACGGC GCGGCAAACG CTTTGCCGTC GAACAAGAAC
101 TCGTGCCGCG ATCGTCCGCG GCCGCCGTCA AAGAAATGGA TTTGTCCGCC
151 yTAAAGGAC GCAAAGCCGC CyTTTACGTC TCCGTTATGG GCGACCAAGG
201 TTCGGGCAAC ATAAGCGGCG GACGCTACTC TATCGACGCA CTGATACGCG
251 GCGGCTACCA CAACAACCCC GAAAGTGCCA CCCAATACAG CTACCCCGCC
301 TACGACACTA CCGCCACCAC CAAATCGAC GCGCTCTCCA GCGTAACCAC
351 TTCCACATCG CTTTGAACG CCCCCGCCG CyCyTGACG AAAACAGCG
401 GACGCAAGG CGAACGCTCC GCCGGACTGT CCGTCAACGG CACGGGCGAC
451 TACCGCAACG AAACCTGCT CGCCAACCCC CGCGACGTTT CCTTCTGAC
501 CAACCTCATC CAAACGCTCT TCTACCTGCG CGGCATCGAA GTCgTACCG
551 CCGrATACG CGACACCGAC GTATTGTA CCGTCGACGT A...

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Number 37 ORF

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1 ATGGCAGAGA TCTGTTTGAT AACCGGCACG CCGGTTTCAG GGAAACATT
51 AAAAATGGTT TCCATGATGG CGAATGATGA AATGTTTAAG CCTGATGAAA
101 AAGCCATACG CCGTAAAGTA TTTACGAACA TAAAAGGCTT GAAAATACCG
151 CACAC.TACA TAGAAACGGA CGCAAAAAG CTGCCGAAAT CGACAGATGA
201 GCAGCTTTCG GCGCATGATA TGTACGAATG GATAAGAAG CCCGAAAATA
251 TCGGGTCTAT TGTCATTGTA GATGAAGCTC AAGACGTATG GCCGGCACGC
301 TCGGCAGGTT CAAAAATCCC TGAAAATGTC CAATGGCTGA ATACGCACAG
351 ACATCAGGGC ATTGATATAT TTGTTTGAC TCAAGGTCTT AAGCTTCTAG
401 ATCAAAATCT TAGAACGCTT GTACGGAAAC ATTACCACAT CGCTTCAAAC
451 AAGATGGGTA TGCGTACGCT TTTAGAAATG AAAATATGCG CGGACGATCC
501 CGTAAAAATG GCATCAAGCG CATTCTCCAG TATCTATACA CTGGATAAAA
551 AAGTTTATGA CTGTGATsrr TmmGCGGAAG TTCATACCGT AAATAAGGTC
601 AAGCGGTCAA AGTGGTTTTA CACTCTGCCa GTAATAGTAT TGCTGATTCC
651 CGTGTGTTGC GGCCTGTCCT ATAAAATGTT GAgCaGTTAC GGAAAAAAC
701 aGGAAGAACC CGCAGCACA GAATCGGCGG CAACAGAACA GCAGGCAGTA
751 CTTCCGATA AAACAGAAG CGAGCCGGTA AATAACGGCA ACCTTACCGC
801 AGATATGTTT GTTCCGACAT TGTCCGAaAA ACCCGrAAGC AAGCcgATTT
851 ATAACGGTGT AAGGCAGGTA AGAACCTTTG AATATATAGC AGGCTGTATA

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901 GAAGGCGGAA GAACCGGATG OGCCTGCTAT TCGCaTCAAG GGACGGCATT
951 gaAAGAAGTG ACGGaGTTGA TGTGcgaAgG aCTATGTaAA AAacGGCTTG
1001 CCGTTTAACC CaTACAAAGA AGAAAGCCAA GGGCAGGAAG TTCAGCAAAG
1051 CGCGCAgCAA CATTcGGACA GGGCGgCAAG TTGCCACATT GGGCGGAAAA
1101 CCGTAGCAGA ACCTAATGTA CGATAATTGG GAAGAACGCG GGAACCGTT
1151 TGAAGGAATC GGgCGGGGCG GTGGTCGGAT CGGCAAACTG A

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Number 38 ORF

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1 GTGGTITTC TGAATGCCGA CAACGGGATA TTGGTTCAGG ACTTGCTTT
51 TGAAAGTCAA CTGAAAAAAT TCCATATCGA TTTTITACAT ACGGGTATGC
101 CGCGTGATTT CGCCAGCGAT ATTGAAGTGA CGGACAAGGC AACCGGTGAG
151 AAACTCGAGC GCACCATCCG CGTGAACCAT CCTTTGACCT TGCACGGCAT
201 CACGATTTAT CAGGCGAGTT TTGCCGACGG CGGTTCCGAT TTGACATTCA
251 AGGCGTGGAA TTTGGGTGAT GCTTCGCGCG AGCCTGTGCT GTTGAAGGCA
301 ACATCCATAC ACCAGTTTCC GTTGGAAATT GGCAACACA AATATCGTCT
351 TGAGTTCGAT CAGTTCACCT CTATGAATGT GGAGGACATG AGCGAGGGCG
401 CGGAACGGGA AAAAGCCTG AAATCCACGC TGCCCGATGT CCGCGCGGTT
451 ACTCAGGAAG GTCACAAATA CACCAAT... .....TACCG
501 TATCCGTGAT GCGCCAGGCC AGGCGGTGCA ATATAAAAC TATATGCTGC
551 CGGTTTTCGA GGAACAGGAT TATTTTTCGA TTACCGGCAC GCGCAGGCG.
601 TTGCAGCAGC AATACCGCTG GCTGCGTATC CCCTTGACA AGCAGTTGAA
651 AGCGGACACC TTTATGGCAT TGCGTGAGTT TTTGAAGAT GGGGAAGGGC
701 GCAACGCTCT .GTTGCCGAC GCAACCAAAG GCGCACCTGC CGAAATCCGC
751 GAACAATTCA TGCTGGCTGC GGAACACAG CTGAACATCT TTGCACAAAA
801 AGGCTATTTG GGATTGGACG AATTTATTAC GTCCAATATC CCGAAAGAGC
851 AGCAGGATAA GATGCAGGGC TATTTCTACG AAATGCTTTA CGGCGTGATG
901 AACGCTGCTT TGGATGAAAC CAT.ACCCGG TACGGCTTGC CCGAATGGCA
951 GCAGGATGAA GCGCGGAATC GTTCTCTGCT GCACAGTATG GATGCGTACA
1001 CCGGTTTGAC CGAATATCCC GCGCCTATGC TGCTGCAACT TGATGGGTTT
1051 TCCGAGGTGC GTTCGTGGG TTTGCAGATG ACCCGTTCCC C.GGTCOGCT
1101 TTTGGTCTAT CTC...

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Number 39 ORF

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1 ATGATGAGTA ATAmAATGGM ACAAAAAGGG TTTACATTGA TTGmGmTGAT
51 GATAGTCGTC GCGTACTCG GCATTATCAG CGTCATTGCC ATACCTTCTT
101 ATCmAAGTTA TATTGAAAAA GGCTATCAGT CCCAGCTTTA TACGGAGATG
151 GycGGTATCA ACAATATTTT CAAACAGTTT ATTTTGAAAA ATCCCTCGGA
201 CGATAATCAG ACCATCGAGA ACAAACCTGGA AATATTTGTC TCAGGCTATA
251 AGATGAATCC GAAAATTGCC AAAAAaTATA GTGTTTCGGT AAAGTTTGTC
301 GATAAGGAAA AATCAAGGGC ATACAGGTTG GTCCGCGTTC CGAAGGCGGG
351 GACGGGTTAT ACTTTGTCCG TATGGATGAA CAGCGTGGGC GACGGATACA
401 AATGCCGTGA TGCCGCTTCT GCCCAAGCCC ATTTGGAGAC CTTGTCCTCA
451 GATGTCGGCT GTGAAGCCTT CTCTAATCGT AAAAAATAA

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Number 40 ORF

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1 ATGAAAAAAT CCTCCCTCAT CAGCGATTG GGCATCGGTA TTTTGAAGCAT
51 CGGCATGGCA TTTGCCGCCC CTGCCGACGC GGTAAGCCAA ATCCGTCAAA
101 ACGCCACTCA AGTATTGAGC ATCTTAAAAA ACGGCGATGC CAACACCGCT
151 CGCCAAAAAG CCGAAGCCTA TGCGATTCCC TATTTGATTT TCCAACGTAT
201 GACCGCATTG GCGGTCGGCA ACCCTTGGsG CACCG.GTCC GACG.GCAAA
251 AACAAAGCGTT GGCCn.AGAA TTTCAACCC...

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Number 41 ORF

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1 ATGAAACACA TACTCCCCCT GATTGCGGCA TCCGCACTCT GCATTTCAAC
51 CGCTTCGGCA CATCTGCCA GCGAACGCTC CACTCAAAAC GAAACCGCTA
101 TGATCAGGCA TACCTCATC TCAAAATACA GTTTTGnnnn nnnnnnnnnn
151 nnnnnnnnnn nnGCCATAAA AAGCAAAGGG ATGGACATTT TTGCGTCAAT

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201 CGACCATCAG GAAGCCGCAC GCCGAAACGG CTTAACGATG CAGCCGGCAA
 251 AAGTCATCGT CTTCCGCACG CCCAAAGCCG GCACGCCGCT GATGGTCAAA
 301 GACCCCGCCT TCGCCCTGCA ACTGCCCTA CCGTCCTCG TTACCGAAAC
 351 GGACGGCAAA GTACGGCCG CCTATACOGA TACGGCGGCC CTCATCGCCG
 401 GCAGCCGCAT CGGTTTCGAC GAAGTGGCAA ACACTTTGGC AAAACGCGAA
 451 AACTGATAC AAAAAACCGT AGGCGAATAA

Number 42 ORF

1 ATGGCTTTTA TTACGCGCTT ATTCAAAGC AGTAAATGGC TGATTGTGCC
 51 GCTGATGCTC CCCGCCTTTC AGAATGTGGC GCGGAGGGG ATAGATGTGA
 101 GCCGTGCCGA AGCGAGGATA ACCGACGGCG GCGAGCTTTC CATCAGCAGC
 151 CGCTTCCAAA CCGAGCTGCC CGACCAGCTC CAACAGGCGT TCGCGCGGG
 201 CGTGCCGCTC AACTTTACCT TAAGCTGGCA SCTTTCGCC CCGATAATCG
 251 CTTCTTATCG GTTTAAATTG GGGCAACTGA TTGGCGATGA CGACAATATT
 301 GACTACAAAC TGAGTTTCCA TCCGCTGACc AaACGCTACC GCGTTACCGT
 351 CGGCGCGTTT TCGACAGACT ACGACACCTT GATGCGGCA TTGCGCGGGA
 401 CCGGCGCGGT TGCCAACCTGG AAAGTCTGA ACAAAGGCGC GCTGTCCGGT
 451 GCGGAAGCAG GGGAAACCAA GCGGAAATC CCGCTGACGC TGTCCACTTC
 501 AAAACTGCCC AAGCCTTTTC AAATCAATGC ATTGACTTCT CAAAACCTGGC
 551 ATTTGGATTG GGGTTGGAAA CCTCTAAACA TATCGGGAA CAAATAA

Number 43 ORF

1 ATGGACACAA AAGAAATCCT CGG.TACGCG GcAGGcTCGA TCGGCAGGCG
 51 GGTTTTAGCC GTCATCATCc TGCCGCTGCT STCGTGGTAT TTCCCGCGCG
 101 ACGACATCGG GCGCATCGTG CTGATGCAGA CCGCGGCGGG GCTgACGGTG
 151 TCGGTGTTGT GCCTCGGGCT GGATCAGGCA TACGTCCGCG AATACTATGC
 201 CACCGCGGAC AAAGACAcCT TGTTCAAAC CCGTTCCTG CCGCGCTGC
 251 TGTCTGCGC CGCGATAGCC GCCCTGCTGC TTTCCCGCCC GTCCCTGCCG
 301 TGTGAAATCC TGTTTTCACT CGACGATGCC GCGCGGGCa TCGGGCTGGT
 351 GCTGTTGAA CtGAGCTTCC TGCCCATCCG CTTTCTCTTA CTGGTTTTCG
 401 GTATGGAAGG ACGCGCCcTT GCCTTTTCGT CCGCGCAACT CGTGCCcAAG
 451 CTCGCCATCC TGCTGCTG.T GCCGCTGACG GTGCGGCTGC TGCACTTTCC
 501 AGCGAACACC GCCGTCTGA CCGCGTTTA CCGGCTGGCA AACCTTGCCG
 551 CCGCCGCTT TTTGCTGTT CAAAACCGAT GCGCTCTGAA GGCGTCCGG
 601 CACGCACCGT TTTCCGCCG CGTCTGCAC CCGGGG.TGC GCTACGGCAT
 651 ACCGATCGCA CTGAGCAGCA TCGCCTATTG GGGGCTGGCA TCCCGCGACC
 701 GTTTGTTTCT GAAAAAATAT GCGCGCTTG AACAGCTCGG CGTTTATTCTG
 751 ATGGGTATTT CGTTCGGCG GCGCGCATT TTTGTTCCAAA GCATCTTTTC
 801 AACGCTCTGG ACACCGTATA TTTTCGCGC AATCGAAGAA AACGCCCGC
 851 CCGCTCGCCT CTCGGCAACG GCAGAATCCG CCGCCGCCCT GCTTGCCCTCC
 901 GCCCTCTGC. TGACCGGCAT TTTCTCGCCC CTTGCCCTCCC TCCTGCTGCC
 951 GGAAACTAC GCGCCGCTCC GGTTTATCGT CGTATCGTGT ATG.TGCCGC
 1001 CGCTGTTTTG CACGCTGGCG GAAATCAGCG SCATCGGTTT GAACGTGTT
 1051 CGCAAAACGC GCCCGATCGC GCTCGCCACC TTGGGCGCGC TGGCGGCAAA
 1101 CCTGCTGCTG CTGGGGCTTG ACCGTGCCGT ACCGGCGAGG CCGCC.GGCG
 1151 CGGCGGTTGC CTGTGCCGCC TCATTCTGGC TGTTTTTTGC CTTCAAGACC
 1201 GAAAGCTCYT GCCGCTGTG GCAGCCGCTC AAACGCCCTGC CGCTTTATCT
 1251 GCACACATTG TTCTGCCTGA CCTCTCGGC GGCCTACACC TGCTTCGGCA
 1301 CGCCGGCAAA CTATCCCTG TTTGCCGCG TATGGGCGGC ATATCTGGCA
 1351 GGCTGCATCC TGCGCCACCG GAAAGATTG CACAACTGT TTCATTATT
 1401 GAAAAACAA GGTTCCTCAT TATGA

Number 44 ORF

1..ATCCTGAAAC CGCATAACCA GCTTAAGGAA GACATCCAAC CTGATCOGGC
 51 CGATCAAAAC GCCTTGTCG AACCGGATGC TCGACAGAG GCAGAGCAGT
 101 CGGATGCGGA AAATGCTGCC GACAAGCAGC CCGTTGCCGA TAAAGCCGAC
 151 GAGGTGGAAG AAAAGGCGGG CGAGCCGGA CCGGAAGAGC CGGACGGACA
 201 GGCAGTGGCT AAGAAAGCG TGACGGAAGA GCGTGAACAA ACCGTGAGG
 251 AAAAGCGCA GAAGAAAGAT GCCGAAACGG TTAATAACA AGCGGTAAAA

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301 CCGTCTAAAG AAACAGAGAA AAAAGCTTCA AAAGAAGAGA AAAAGGCGGC
351 GAAGGAAAAA GTTGCAACCA AACCAACCCC GGAACAAATC CTCAACAGCG
401 GCAGCATCGA AAAMGCGCGC AgTGCGCGCG CCAAAGAAGT GCAGAAAATG
451 AA.AACGTCC GACAAGGCGG AAGC.AACGC ATTATCTGCA AATGGGOGCG
501 TATGCCGACC GTCAGAGCGC GGAAGGGCAG CGTGCCAAAC TGGCAATCTT
551 GGGCATATCT TCCAAGGTGG TCGGTTATCA GGCGGGACAT AAAACGCTTT
601 ACCGGGTGCA AAGCGGCAAT ATGCTGCGG ATGCGGTGA

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Number 45 ORF

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1 ATGAACCACG ACATCACTTT CCTCACCTG TTCCTACTCG GTkTCTTCGG
51 CGGAACGCAC TGCATCGGTA TGTGCGGCGG ATTAAGCAGC GcGTTTGS.s
101 TCCAACCTCCC CCGCATATC AACCGCTTTT GGCTGATCCT GCTGCTTAAC
151 ACAGGACGGG TAAGCAGCTA TACGGCAATC GGCCTGATAC TCGGATTAAAT
201 CGGACAGGTC GCGCTTTCAC TCGAcCAaC CCGCGTCCTG CAGAATATTT
251 TATACACGGC CGCCAACCTC CTGCTGCTCT TTTTAGGCTT ATACTTGAGC
301 GGTATTTCTT CCTTGGCGGC AAAAATCGAG AAaATCGGCA AACCGATATG
351 GCGGAACCTG AACCCGATAC TCAACCGGCT GTTACCCATA AAATCCATAC
401 CCGCTGCGCT tGCGgTCGGA ATATTATGGG GCTGGCTGCC GTGCGGACTG
451 GTTTACAGCG CGTCGCTTTA CGCGCTGGGA AgCGGTAGTG CGGCAACGGG
501 CGGGTTATAT ATGCTTGCCT TTGCACTGGG TACGCTGCCC AATCTTtTAG
551 CAATCGGCAT TTTtCCCTG CAACTGAaA AAATCATGCA AAACCGATAT
601 ATCCGCTGT GTACGGGATT ATCCGTATCA TTATGGGCAT TATGAAACT
651 TGCCGTCTG TGGCTGTAA

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Number 46 ORF

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1 ATGGAAAACC AAAGGCGGCT CCTAGGCTTT CGCTTGCCAC TTTTGGCGGC
51 GATGACGTGG GGAACGCTGC CGAT.TCCGT GCGGCAGGTA TTGAAGTTTG
101 TCGATGCGCC GACGCTGGTG TGGGTGCGTT TTACCGTGGC GGCGGCGGTA
151 TTGTTTGT TTGCTGGCACT GGGCGGGCGG CTGCGaAAGC GGCGaGGATT
201 TTTCTTGGTG CTCATTCAAG CTGCTGCTGC TCGGCGTGGC GGGCATTTOG
251 GCAAACTTTG TGCTGATTGC CCAAGGGCTG CATTATATTT CGCCGACCAC
301 GACGCAGGTT TTGTGGCAGA TTTGCGCGTT TACGATGATT GTwGTCGGTG
351 TGTTGGTGTT TAAAGACCGG ATGACTGCCG CTCAGAAAT CGGCTTGGTT
401 TTGCTGCTTG CCGGTTTGCT TATGTATTTT AACGATAAAT TCGGCGAGTT
451 GTCGGGTTTG GCGCGGTATG C.AAGGGCGT GTTGCTGTGT GCGGCAGGCA
501 GTATGGCATG GGTGTGTAAT GCGGTGGCGC AAAAGCTGCT GTCGGOGCAA
551 TTCGGGCCGC AACAGATTCT GCTGTTGATT TATGCGGCAA GTGCCGCGT
601 GTTCCTGCCG TTTGCCGAAC CGGCACACAT CGGAAGTATG GACGGTACGT
651 TGGCGTGGGT ATGTATTGCG TATTGCTGCT TGAATACGTT AATCGGTTAC
701 GGCTCGTTTG GCGAGGCGTT GAAACATTGG GAGGCTTCCA AAGTCGCGC
751 GGTAACAACC TTGCTCCCG TGTTTACCGT AATAAATACT TTGCTCGGGC
801 ATTATGTGAT GCCTGAAACT TTTGCCGCGC CGGA..

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Number 47 ORF

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1 ATGGTAGCTC GTCGGGCTCA TAACCGAAG GTCGTAGGTT CGAATCCTGT
51 .CCCgCAACC TAATTTCAAA CCCCTCGGTT CAATGCGAG GG.GTTTGT
101 T.TTGCTGT TTCTGTTTC CTGTTTCCTG CCGCTCCGT TTTTGGCGG
151 ATTTTCCTTC CGGCCGAAT ATCGGAACGG CAGACGCGC TCTGTTTGCG
201 GTTGCAAATT CAGGCAGTTT GGCTACAATC TTCCGATATG TCTCAAGAA
251 AGCCAACCAT GCCGACGTC CGTTTTACCG AATCCGTGAG CAAACAAGAC
301 CTGTATGCTC TGTTGAGTG GGCAAAAGCA AGTTACGGTG CAGAAAGTTG
351 CTGGAAAACG CTGTATCTGA ACGGTCysCC TTTGGGCAAC CTGTGCGCG
401 AATGGGTGGA ACGCGTsmmA AAAGACTGGG AGGCAGGCTG CyCGGAGTCT
451 TCAGACGGCA TTTTCTGAA TgCGGACGGc TGgCetGATA TGGgCGGAcg
501 cTTACAGCAC CTGCGCTCG GTTGGCACTG TGCGGGGCTG TTGGACGgst
551 GCGGCAACGA GTGTTTCGAC CTGACCGAGC GCGGCGGCAA CCCCTTGTT
601 ACGCTCGaAc GCGCCGYTTT mCGTCTkTC GGA CTGCTCA GCCGCGCGT
651 CCATCTCAAC GGTCTGACCG AATCGGACGG CCGATGGCAT TTCTGGATAG
701 GCAGGCGCAG TCCGCACAA GCAGTCGATC CCAACAAACT CGACAATACT

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751 rCCGCCGGCG GTGTTTCGG CGGCGAAATG CCGTCTGAAG CCGTGTGTCC
 801 CGAAAGCAGC GAAGAAGCCG GTTGGATAA AACGCTGCTT CCGCTCATCC
 851 GCCCGGTATC GCAGCTGCAC AGCCTGCGCT CCGTCAGCCG GGGTGTACAC
 901 AATGAAATCC TGTATGTATT CGATGCCGTC CTGCCG...

Number 48 ORF

1 ATGAATAGAC CCAAGCAACC CTCTTCOGT CCCGAAGTCG CCGTTGCCCG
 51 CCAAACCAGC CTGACGGGTA AAGTGATTCT GACACGACCG TTGTCAATTT
 101 CCCTATGGAC GACATTGCA TCGATATCTG CGTTATTGAT TATCCTGTTT
 151 TTGATATTG GTAACATATC GCGAAAGACA ACAGTGGAGG GACAAATTTT
 201 ACCTGCATCG GCGTAATCA GGGTGTATGC ACCGATACG rGKACAATTA
 251 CAGCGAAATT CGTGGAGAT GmsAAAAGG TTAAGGCTGG CGACAAGCTA
 301 TTTGCGCTTT CGACCTCAGG TTTCGGCGCA GGAGGTAGCG TGCAGCAGCA
 351 GTTGAAAACG GAGGCAGTTT TGAAGAAAAC GTTGGCAGAA CAGGAACCTG
 401 GTCGTCTGAA GCTGATACAC GGAATGAAA CGCGCAGcCT TAAAGCAACT
 451 GTCGAACGTT TGGAAAACCA GGAATCCAT ATTCGCAAC AGATAGACGG
 501 TCAGAAAAGG CGCATTAGAC TTGCGGAAGA AATGTTGCAG AAATATCGTT
 551 TCCTATCCGC .CAATGA

Number 49 ORF

1 ATGCTGAATA CTTTTTTTGC CGTATTGGGC GGCTGCCTGC TGCT.TTGCC
 51 GTGCGGCAAA TCCGTAAATA CGGCGGTACA GCCGCAAAAC GCGGTACAAA
 101 GCGCGCCGAA ACCGGTTTTT AAAGTCATAT ATATCGACAA TACGGCGATT
 151 GCCGGTTTGG ATTTGGGACA AAGCAGCGAA GGCAAAACCA ACGACGGCAA
 201 AAAACAAATC AGTTATCCGA TTAAGGCTT GCCGAACAA AATGTTATCC
 251 GACTGATCGG CAAGCATCCC GCGACTTGG AAGCCGTCAG CCGCAAATGT
 301 ATGGAACCG ATGATAAGGA CAGTCCGGCA GGTGGGCAG AAAACGGGT
 351 GTGCCATACC TTGTTTGCCA AACTGGTGG CAATATCGCC GAAGACGGCG
 401 GCAAACCTGAC GGATTACCTA GTTTCGCATG CCGCCCTGCA ACCCTATCAG
 451 GCAGGCAAAA GCGGCTATGC CGCCGTGCAG AACGGACGCT ATGTGCTGGA
 501 AATCGACAGC GAAGGGGCGT TTTATTTCCG CCGCCGCCAT TATTGA

Number 50 ORF

1 ATGGAAGATT TATATATAAT ACTCGCTTTG GGTGTTGGTG CGATGATTGC
 51 CGgATTATC GATgcatTg cGggCGGGG TGGTTTGATT ACGCTGCCCG
 101 CACTCTTGT GGCAGGTATT CCTCCGTTT CGGCAATTGC CACCAACAAG
 151 CTGCAAGCAG CCGCTGCTAC GTTTTCAGCT ACGGTTTCTT TTGCACGCAA
 201 AGGTTTGATT GATTGGAAGA AAGGTCTCCC GATTGCCGCA GCATCGTTTG
 251 TAGGCGGCGT GGCcGGTGCA TTATCGGTCA GCTTGGTTTC CAAAGATATT
 301 CTgCTgCGG TCGTGCCGGT TTTGTTGATA TTTGTGCGAC TGTATTTTGT
 351 GTTTTCGCCC AAGCTCGACG GCAGTAAGGA AGGCAAAGCC AGAATGTCTT
 401 TTTTCTGTT cGGGCTGACG GTCGC.ACCG CTTTGGGTT TTTACGACGG
 451 TGTGTTGGA CCGGGTGTG GCTCGTTTT TCTGATTGCC TTTATTGTTT
 501 TGCTCGGCTG CAAGCTGTTG AACGCGATGT CTTACACCAA ATTGGCGAAC
 551 GTTGCTGCA ATCTTGGTTC GCTATCGGTA TTCCTGCTGC ACGGTTGCAT
 601 TATTTTCCCG ATTGCGGCAA CGaTGGCGT CCGTGCGTTT GTCGGtGCGA
 651 ATTTAgGTGC GAGATTGCCC GTaCgctTCG GTTCGAAGCT GATTAA

Number 51 ORF

1 .CTGCTAGGGT ATTGCATCGG TTATCGGTAC GGCTGTTGCA GCAAAACCAG
 51 CCGCAGACGG ATTATTGGT CAAATTGGA TCGTTTTGGG CGAG.ATTTT
 101 TGGTTTTCTG GGACTGTATG ACGTCTATGC TTCGGCATGG TTTGTGTTA
 151 TCATGATGTT TTTGGTGGTT TCTACCAGTT TGTGCCTGAT TCGAATGTG
 201 CCGCCGTTCT GCGCGGAAAT GAAGTCTTTT CCGGAAAAGG TTAAGAAAAA
 251 ATCTCTGGCG GCGATGCGCC ATTCTTCGCT GTTGGATGTA AAATTGCGC
 301 CCGAGGTTGC CAAACGTTAT CTGGAAGTAC AAGGTTTTCA GGGGAAAACC
 351 ATTAACCGTG AAGACGGGTC GGTCTGATT GCCGCCAAA AAGGCACAAT

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401 GAACAAATGG GGCTATATCT TTGCCCATGT TGCTTTGATT GTCATTTGCC
 451 TGGGCGGGTT GATAGACAGT AACCTGCTGT TGAAACTGGG TATGCTGACC
 501 GGTCGGATTG TTCCGGACAA TCAGGCGGTT TATGCCAAGG ATTTTC.AAGC
 551 CCGAAAGTAT .TTTGGGTGC gTCCAATCTC TCATTTAGGG GCAACGTCAA
 601 TATTTCG.A GGGGCAGAgT GCGGATGTGG TTTTCTGA

Number 52 ORF

1 ATGCCGCTCG AAACACGCCT GCCGAACCTT ATCCGCGTCT TGATATTTGC
 51 CCTGGGTTTC ATCTTCTGA ACGCCTGTTT GGAACAAACC GCGCAACCG
 101 TTACCCCTGCA AGGCGAAACG ATGGGCACGA CCTATACCGT CAAATACCTT
 151 TCAAATAATC GGGACAAACT CCCCTCACCT GCCGAAATAC AAAACGCGAT
 201 CGATGACGCG CTAAAGAAG TCAACCGGCA GATGTCCACC TATCAGCCCG
 251 ACTCCGAAT CAGCCGGTTC AACCAACACA CAGCCGGCAA GCCCCTCCGC
 301 ATTTCAAGCG ACTTGCACA CGTTACTGCC GAAGCCGTCC GCGTGAACCG
 351 CCTGACACAC GGGCGCTGG ACGTAACCGT CGGCCCTTG GTCAACCTTT
 401 GGGGATTCCG CCCGACAAA TCGTTACCC GTGAACCGTC GCCGGAACAA
 451 ATCAAACAGG CCGCATCTTA TACGGGCATA GACAAAATCA TTTTGAACA
 501 AGGCAAAGAT TACGCTTCTT TGAGCAAAAC CCACCCCAAG GCCTATTTGG
 551 ATTTATCTTC GATTGCCAAA GGCTTCGGCG TTGATAAAGT TGCGGGCGAA
 601 CTGGAAAAAT ACGGCATTCA AAATTATCTG GTCGAAATCG GCGGCGAGTT
 651 GCACGGCAAA GGCAAAAACG CGCGCGGCGA ACCGTGGCGC ATCGGTATCG
 701 AGCAGCCCAA TATCGTCCAA GCGCGCAATA CGCAGATTAT CGTCCCGCTG
 751 AACAAACCGT CGCTTGCCAC TTCGGCGGAT TACCGTATTT TCCACGTGGA
 801 TAAAAACGGC AAACGCTCT CCCATATCAT CAACCCGAAC AACAAACGAC
 851 CCATCAGCCA CAACCTCGCC TCCATCAGCG TGGTCGAGA CAGTGCATG
 901 ACGGCGGACG GCTTGTCCAC AGGATTATTC GTATTGGGCG AAACCGAAGC
 951 CTTAAAGCTG GCAGAGCGCG AAAAAGCTCG TGTTTCTCTG ATTGTACGGG
 1001 ATAAAGGCGG CTACCGCACC GCCATGTCTT CCGAATTGGA AAAAGTCTC
 1051 CGCTAA

Number 53 ORF

1 ..CCGTGCCGCC GACAGGGCGA CGACGTGTAT GCGGCGCAG CGTCCCGTCA
 51 AAAATTGTGG CTGCGCTTCA TCGGCGGCGG GTCGCATCAA AATATACGGG
 101 GCGGCGCGGC TGCGGACGGG TGGCGCAAAG GCGTGCAAT CCGCGGCGAG
 151 GTGTTTGTAC GGCAAAATGA AGGCAGCCKA yTGGCAATCG GCGTGATGGG
 201 CCGCAGGGCC GGCCAGCAGC CwTCAGTCAA CGGCAAAGGC GGTGCGGCAG
 251 gCAGTGATT GTATGGTTAT GgCGGGGgTG TTTATGCTgC GTGGCATCAG
 301 TTGCGCGATA AACAAACGGG TgCGTATTTG GACGGCTGGT TGCAATACCA
 351 ACGTTTCAA CACCGCATCA ATGATGAAAA CCGTGCGGAA CgCTACGAAA
 401 CCAAAGGTTG GACGGCTTCT GTCGAAGGCG GCTACAACGC GCTTGTGGCG
 451 GAAGGCATTG TCGGAAAAGG CAATAATGTG CGGTTTTACC TACAACGCA
 501 GgCGCAGTTT ACCTACTTGG GCGTAAACGG CGGCTTTACC GACAGCGAGG
 551 GGACGGCGGT CGGACTGCTC GGCAGCGGTC AGTGGCAAAG CCGCGCGGGC
 601 AtTCGGGCAA AAACCGGTTT TGCTTTGCGT AACGGTGTCA ATCTTCAGCC
 651 TTTTGGCGCT TTTAATGTtT TGCACAGGTC AAAATCTTTC GGCGTGAAA
 701 TGGACGGCGA AAAACAGACG CTGGCAGGCA GGACGGCACT CGAAGGGCGG
 751 TTCGGTATTG AAGCCGGTTG GAAAGGCCAT ATGTCCGCA..

Number 54 ORF

1 ..GCGGAATATG TTCAGTTCTC TATAGATTG TTCAGTGTGG GTAAATCGGG
 51 GGGCGGTATA CCTAAGGCTA AGCCTGTGTT TGATGCGAAA CCGAGATGGG
 101 AGGTTGATAG GAAGCTTAAT AAATTGACAA CTCGTGAGCA GGTGAGAAA
 151 AATGTTCAGG AAACGAGAAG AAGGAGTCAG AGTAGTCAGT TTAAGCCCA
 201 TCGCRAACGA GAATGGGAAA ATAAACAGG GTTAGATTTT AATCATTTTA
 251 TAGGTGGTGA TATCAATAAA AAAGGCACAG TAACAGGAGG GCATAGTCTA
 301 ACCCGTGGTG ATGTACGGGT GATACAACAA ACCTCGGCAC CTGATAAACA
 351 TGGGT.TTA TCAAGCGACA GTGGAAATTN A

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Number 55 ORF

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1 ATGAATATTC ACACCCTGCT CTCCAACAA TSGACGCTGC OGCCATTCTT
51 GCCGAAACGG CTGCTGCTGT CCCTGCTGAT ACTGCTTGCC CCCAATGCGG
101 TGTTTTGGGT TTGGCACTG CTGACCGCCA CCGCCCGCCC GATTGTCAAT
151 TTGGACTATC TTCCCGCGC GCTGCTGATC GCCCTGCCTT GGCGTTTGT
201 CAAATTGCC GCGGTATGG CGTTTGGCT GCGGTTTGT TTGACGGGC
251 TGATGATGGT GATCCAATC TTCCCTTTTA TGGATCTCAT CGCGCCATC
301 AACCTCGTCC CCTTCATCT GACCGCCCCC GCCCCTTATC AGATAATGAC
351 CGGGCTG...

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Number 56 ORF

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1 ..GTGAGCGGAC GTTACCGCGC TTTGGATCGC GTTTCACAAA TCATCATCGT
51 TACTTTGAGT ATCGCCACGC TTGCGCGCGC CGGCATCGCT ATGTGCGCGG
101 GTATGCAGAT GCAGTCCGAT TTTATCGAGC CGACACCGTG GACGCTTGCC
151 GGTTTGGGCT TCCTGATCGC GCTGATGGGC TGGATGCCCG CGCGATTGA
201 AATTTCCGCC ATCAATCTT TGTGGGTAAC CGAAAAACAA CGCATCAATC
251 CTTCGAATA CCGCGACGGG ATTTTGAAT TCAACGTGGG TTATATCGCC
301 AGTGGGTTT TGGCTTTGGT TTCTCTGCA CTGGGCGC.G TAGCGCGGAA
351 CGGCAACGGC GA.ACAGTGC AGATGGCGGG CGGCAATAT AACGGGCAAT
401 TGATCAATAT GTACGCC..

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Number 57 ORF

```

1 ..TTGCGGGAAA CGGCATATGT TTTGGATAGT TTTGATCGTT ATTTTGTGT
51 TGCGCTTGCC GGCTTGTTTT TTGTCGCGC ACAATCCGAA CGCGAGTGGA
101 TGCGCGAGGT TTCTGCGTGG CAGGAAAAGA AAGGGGAAAA ACAGGCGGAG
151 TGCCCTGAAA TCAAAGACGG TATGCCCGAT TTTCCCGAAC TTGCCCTGAT
201 GCTTTTCCAC GCCGTCAAAA CGGCAGTGTA TTGGCTGTT GTCGGTGTCG
251 TCCGTTTCTG CCGAACTAT CTGGCGCAGC AATCCGAACC GGACAGGCC
301 GTTCGCGCT..

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Number 58 ORF

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1 ATGATTATC AAAGAACT CATCAAAGAA CTCTCTTTA CCGCGTGG
51 CATTTTCGTC GTCCTCTGG CGGTATTGGT CTCCACGAC GCAATCAACC
101 TGCTCGCCG TGCCGCGAC GGGC..GTGA TCGCCATCGA TGCCGTGTTG
151 GCATTGGTCG GCTTCTGGGT C.....
//
901 .....A TTGCCATCGG TTTGTTTTTA ATTTACCAA ACGGGCTGAC
951 CCTGCTTTTT GAAGCGTGG AAGACGGCAA AATCCATTT TGGCTCGGAC
1001 TGCTGCCTAT GCACATTATC ATGTTTGTC TTGCACTCAT CTGTTGCGC
1051 GTCCGCAGTA TGCCAGCCA GCCCTTCTGG CAGGCGGTTG GCAAAAGTCT
1101 GACATTGAAA GCGGAAAAAT GA

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Number 59 ORF

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1 ..GGTGGTGGTT TTATCAATGC TTCCTGTGCC ACTTTGACGA CAGCCAAACC
51 GCAATATCAA GCAGGAGACC TTAGCGCTTT TAAGATAAGG CAAGGCAATG
101 TTGTAATCGC CGGACACGGT TTGGATGCAC GTGATACCGA TTACACAGT
151 ATTCTCAGT ATCATTCCAA AATCGATGCA CCGTATGGG GACAAGATG
201 TCGTGTGTC GCGGGACAA ACGATGTGGC CGCAACAGGT GATGCACAT
251 CGCCTATTCT CAATAATGCT GCTGCCAATA CGTCAAACAA TACAGCCAAC
301 AACGGCACAC ATATCCCTTT ATTTGCGATT GATACAGGCA AATTAGGAGG
351 TAT.GTATGC CAACAAAATC ACCTTGATCA GTACGGTCGA GCAAGCAGGC
401 ATTCGTAA

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Number 60 ORF

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1  ..TCAACGGGAC ATAGCGAACA AAATTACACT TTGCCGCGAG AAATCACACG
51  CAACATTTCA CTGGGTTTCAT TTGCCTATGA ATCGCATCGC AAAGCATTAA
101 GCCATCATGC GCCAGCCAA GGCAGTGAAT TGCCGCAAAG CAACGGTATT
151 TCGCTACCCT ATACGTCCAA TTCTTTTACC CCATTACCCA GCAGCAGCTT
201 ATACATTATC AATCCTGTCA ATAAAGGCTA TCTTGTGAA ACCGATCCAC
251 GCTTTGCCAA CTACCGTCAA TGGTTGGGTA GTGACTATAT GCTGGACAGC
301 CTCAAAC TAG ACCCAAACA TTTACATAA CGTTTGGGTG ATGGTTATTA
351 CGAGCAACGT TTAATCAATG AACAAATCGC AGAGCTGACA GGGCATCGTC
401 GTTTAGACGG TTATCAAAAC GACGAAGAAC AATTTAAAGC CTTAATGGAT
451 AATGGCGCGA CTGCGGCAGC TTcGATGAAT CTCAGCGTTG GCATTGCATT
501 AAGTGCCGAG CAAGTAGCGC AACTGACCAG CGATATTGTT TGGTTGGTAC
551 AAAAAGAAAT TAAGCTTCCT GATGGCGGCA CACAAACCGT ATTGGTGCCA
601 CAGGTTTATG TACGCGTTAA AAATGGCGAC ATAGACGGTA AAGGTGCATT
651 GTTGT CAGGC AGCAATACAC AAATCAATGT TTCAGGCAGC CTGAAAAACT
701 CAGGCACGAT TGCAGGCGC AATGCGCTTA TTATCAATAC CGATACGCTA
751 GACAATATCG GTGGGCGTAT TCATGCGCAA AAATCAGCGG TTACGGCCAC
801 ACAAGACATC AATAATATTG GCGGCATGCT TTCTGCCGAA CAGACATTAT
851 TGCTCAACGC AGGCAACAAC ATCAACAGCC AAAGCACCAC CGCCAGCAGT
901 CAAAATACAC AAGGCAGCAG CACCTACCTA GACCGAATGG CAGGTATTTA
951 TATCACAGGC AAAGAAAAAG GTGTTT..

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Number 61 ORF

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1  ..TCAGGGAATA ACCTCAATGC CAAAGCTGCC GAAGTCAGCA GCGCAAACGG
51  TACACTCGCT GTGTCTGCCA ATAATGACAT CAACATCAGC GCAGGCATTA
101 ACACGACCCA TGTGTATGAT GCGTCCAAAC ACACAGGCAG AAGCGGTGGT
151 GGCAATAAAT TAGTCATTAC CGATAAAGCC CAAAGTCATC ACGAAACCGC
201 CCAAAGCAGC ACCTTTGAAG GCAAGCAAGT TGTATTGCAG GCAGGAAACG
251 ATGCCAACAT CCTTGGCAGC AATGTTATTT CCGATAATGG CACCCAGATT
301 CAAGCAGGCA ATCATGTTG CATTGGTACA ACCCAAACCTC AAAGCCAAAG
351 CGAAACCTAT CATCAAACCC AGAAATCAGG ATTGATGAGT GCAGGTATCG
401 GCTTCACTAT TGGCAGCAAG ACAACACAC AAGAAAACCA ATCCCAAAGC
451 AACGAACATA CAGGCAGTAC CGTAGGCAGC TTGAAAGGCG ATACCACCAT
501 TGTTCAGGC AAACACTAGC AACAAATCGG CAGTACCGTT TCCAGCCCGG
551 AAGGCAACAA TACCATCTAT GCCCAAAGCA TAGACATTCA AGCGGCACAC
601 AACAAATTAA ACAGTAATAC CACCCAAACC TATGAACAAA AAGG.CTAAC
651 GGTGGCATTG AGTTCGCCG TTACCGATTG GGCACAACAA ...

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Number 62 ORF

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1  ATGATTTACA TCGTACTGTT TCTAGCTGTC GTCCTCGCGG TTGTGCGCTA
51  CAACATGTAT CAGGAAAACC AATACGCAA AAAAGTGCGC GACCAATTGCG
101 GACACTCCGA CAAAGATGCC CTGCTCAACA GCWAACCAG CCATGTCCGC
151 GACGGCAAAC CGTCCGGCGG GTCAGTCATG ATGCCGAAAC CCCAACCGGC
201 GGTCAAAAAA ACGGCAAAAC CCCAAGACCC CGyCATGCGC AACCTGCAAG
251 AACAGGATGC CGTCTACATC GCCAAGCAGA AACAGGCAAA AGCCTCCCGG
301 TTCAAAACCG AAATCGAAAC CGCCTTGGAA GAAAGCGGCA TTATCGGCAA
351 CTCCGCCAC ACCGTTTCCG AACCCCAAAC CGGACATTCC GCAACGAAAC
401 CTGCCGACGC GTGGCAAAA CCTGCACCGG TTCCGCAAC ACCTGCAAAA
451 CCGCTGATTA CGCTCAAAGA ACTGTCAAAA GTCGAATTAT CCTGGTTTGA
501 CGTGCGCATC GACTTCATCT CCTAT...

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Number 63 ORF

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1  ..GCGCGGCACG GCACGGAAGA TTTCTTCATG AACAACAGCG ACAC.ATCAG
51  GCAGATAGTC GAAAGCACCA CCGGTACGAT GAAGCTGCTG ATTTCTCCA
101 TCGCCTGAT TTCAATTGGTA GTCGGCGGCA TCGGCGTGAT GAACATCATG
151 CTGGTGTCCG TTACCGAGCG CACCAAAGAA ATCGGCATAC GGATGGCAAT
201 CGGCGCGCGG CGCGGCAATA TTTyGCAGCA GTTTTGTATT GAGGCGGTGT
251 TAATCTGCGT CATCGCGGT TTGGTGGCGG TGGGTTTGTC CGCCGCGGTC

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301 AGCCTCGTGT TCAATCATTT TGTAACCGAC TTCGGGATGG ACATTTCCGC
 351 CATGTCCGTC ATCGGCGCGG TCGCTGTTC GACCGGAATC GGCATCGGAT
 401 TCGGCTTTAT GCCTGCCAAT AAAGCAGCCA AACTCAATCC GATAGACGCA
 451 TTGGCACAGG ATTGA

Number 64 ORF

1 .GGGACGGGAG CGATGCTGCT GCTGTTTTAC GCGGTAACGA T.CTGCCTTT
 51 GGCCACTGGC GTTACCCTGA GTTACACCTC GTGATTTTT TTGGCGGTAT
 101 TTTCCTTCTT GATTTTGAAA GAACGGATTT CCGTTTACAC GCAGGOGGTG
 151 CTGCTCCTTG GTTTTGCCGG CGTGGTATTG CTGCTTAATC CCTCGTTCOG
 201 CAGCGGTCAG GAAACGGCGG CACTCGCCGG GCTGGCGGGC GCGCGGATGT
 251 CCGGCTGGGC GTATTTGAAA GTGCGCGAAC TGTCTTTGGC GGGCGAAGCC
 301 GGCTGGCGCG TCGTGTTTTA CCTTTCOGTG ACAGGTGTGG CGATGTCTGC
 351 GGTGTTGGCG ACGCTGACCG GCTGGCACAC CCTGTCTTT CCATCGGCAG
 401 TTTATCTGTC GTGCATCGGC GTGTCCGGGC TGATTGCCCA ACTGTGATG
 451 ACGCGCGCCT ACAAAGTCGG CGACAAATTC ACGGTTGCTT CGCTTCTCTA
 501 TATGACCGTC GTTTTTCCG CTCTGTCTGC CGCATTTTTT CTGGGCGAAG
 551 AGCTTTCTG GCAGGAAATA CTGGGTATGT GCATCATCAT CCTCAGCGGT
 601 ATTTGA

Number 65 ORF

1 ATGAAGCGGC GTATAGCCGT CTTCGTCTCG TTCCCGCAGA TAATCCGAGT
 51 TTTGGGACAA CTGTTGCCGA AAATCGTCAA TACAGTTCOG GCACATCGGA
 101 TGCTCTTCCA GATTTTCGGG ATGTTCTTTT TCTTCATACA CCAGCAATAT
 151 CTGCCCGGGA TCGCCGAAAT CGATTCCCA TCGGCGATCG TGTTCGGTGC
 201 GCTCCTCTTC CGTCATCTGC CCGCGCATTC CCTGTATGGT AAAGCCGCGG
 251 TAGGGGATGC CgTTGCACAC GAACATCCAG TCGTGTATGT CGTCAACCGG
 301 AACGCAACG cTTTCGCCTT GTTCGACATT GGTCAGTTCG CcGGTTTAT
 351 TGTTGAGCAC ACCGTAAATA TAAAGACCGT CAAATAAAT ATCGTGCATC
 401 CACATATGTT CGCAAATTC GCGTCTTCG CCGTCTTGA AAAAAGGGAC
 451 TTTGACCATG GCAAAATCCA AGGCGGAAAT AATGCGGCGG CGTTCCCAAA
 501 AAAGcTCGG CCAAAATAT TTGAATGTTT TACGGGCGCG TTCGTCCGCA
 551 CGGTTTACCG GTTCGTCTGC CTGTTCTACA TAATAAATGA CGGAATCGCC
 601 CATCATATCT GCTCCTCAAC GTGTAAGGTA TCTGTTTGCA CCTTACTGCG
 651 GCTTCTGcC kTCGGCATCC GATTCCGATT TGAAAAGTTC mnrwyATTG
 701 GAATAG

Number 66 ORF

1 ATGGAAAATA TGGTAACGTT TTCAAAAATC AGACCGCTTT TGGCAATCGC
 51 CGCGCGCCGG TTGCTTGCCG CC.TGCGGAC GCGGGGAAAT AATGCTGTCC
 101 GCAAGCCGGT GCAAACCGCC AAACCCGCGG CAGTGGTCGG TTTGGCACTC
 151 GGTGGCGGCG CATCTAAAGG ATTTGCCCAT GTAGGTATTA TTAAGGTTTT
 201 GAAAGAAAC GGTATTCTCTG TGAAGGTGGT TACGGGCACC TCCGAGGTT
 251 CGATTGTCCG CAACCTTTTT GCATCGGGTA TGTGCCCCGA CCGCTCGAA
 301 TTGGAAGCCG AAATTTTAGG CAAAACCGAT TTGGTCGATT TAACCTTGTC
 351 CACCAATGGG TTTATCAAAG GCGCAAAGCT GCAAATTAC ATCAACCGAA
 401 AACTCCGCGG CATGCAGATT CAGCAGTTTC CCATCAAAT TGGCGCC..

Number 67 ORF

1 ATGTTTCGTT TACAATTGAG GCTGTTTCCC CCTTTGCGAA CCGCCATGCA
 51 CATCTGTG ACCGCCCTGC TCAATGCGT CTCCGTGcTG CCGCTTCTCT
 101 GTCTGCACAC GCTGGGAAAC CGGCTCGGAC ATCTGGCGTT TTACCTTTTA
 151 AAGGAAGACC GCGCGCGCAT CGTCGCCmAT ATGCGGCAGG CGGGTTTGAA
 201 CCCCAGCCCC AAAACGGTCA AAGCGTTTTT TGCGGAAACG GCAAAGGGCG
 251 GTTTGGAAC TGGCCCCGCG TTTTTCAGAA AACCGGAAGA CATAGAAACA
 301 ATGTTCAAAG CCGTACACGG CTGGGAACAT GTGCAGCAGG CTTTGGACAA
 351 ACACGAAGG CTGCTATT..

Number 68 ORF

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1  ..GCGTGGTCCG CCGGCGAATC GTGGCGTGTG TTAATGGAAA GTGAAACGTG
51  GCATGCGGTG TGGAACTACT TGCGCTTCTC GCGCGCGGCG GTGTATGCGG
101 CAGCGGTTTT GGGTGTGGTG TATGCGGCGC CCGCGCGGCG GTCCGCGTGG
151 ATGCGCGGCG TGATGTTTTA GCGGTTTATG GTGTGCGCGG TTTGTGTTTC
201 GCGGCGCGTG CTGCTGCTTT ATCCGCACTG GACGGCTTCG TTGCCGTTGC
251 TGCTGGCGAT GTATGCGCTG CTGGCGTATC CGTTTGTGGC AAAAGATGTT
301 TTATCAGCCT GGGATGCACT GCGCGCGGAT TACGGCAGGG CCGCGCGGCG
351 TTTGGGTGCA AACGGCTTTC AGACGGCATG CCGCATCAG TTCCCTCTCT
401 TGAAACCGGC GTTGGCGGCG GGTCTGACTT TGGCGGCGGC AACCTGCGTG
451 GCGGAATTTG CCGCGACATT GTTCTGTGCG CGTCCGGAAT GGCAGACGCT
501 GACGACTTTG ATTTATGCCT ATTTGGGACG CCGGGGTGAG GATAATTACG
551 CCGGGCGGAT GGTGCTG..

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Number 69 ORF

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1  ATGGACGGCT GGACACAGAC GCTGTCCGCG CAAACCCCTGT TGGGCATTTT
51  GCGCGCGGCA ATCATCCTCA TTCTGATTTT AATCGTCAGA TTCCGCATCC
101 ACGCGCTGCT GACACTGGTC ATCGTCAGCC TGCTGACGGC TTTGGCAACC
151 GGTTTGCCCA CAGGCAGCAT TGTCAAAGAC ATACTGGTCA AAAACTTCGG
201 CCGCACGCTC GCGCGCGTGG CGCTTCTGGT CCGCCTGGGC GCGATGCTCG
251 AACGTTTGGT C...

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Number 70 ORF

```

1  ..GATTCGGCA TATCGCCCGT GTATCTTTGG GTTGCCGCGG CGTTCAAACA
51  TTTGCTGTCG CCGTGGGCTG CCGACTCATA CGATGTGCGA CGCTTTGCAG
101 GCGTATTTT TGCCGTTATC GGACTGACTT CCTGCGGCTT TGCCGGTTTC
151 AACTTTTGG GCAGACACCA CCGGCGCAC. GTCGTCTGTA TTCTCATGG
201 CTGTATCGGG CTGATTCCAG TTGCCCATTT CCTCAACCCC GCTGCGCGCG
251 CCTTTGCCGC CGCCGGACTG GTGCTGCAAG GTTATTCTTT GGCTGCGCGG
301 CCGGTGATTG CGCCTCTTT TCTGCTCGGT ACGGGCTGGA CGCTGATGTC
351 GTTGGCAGCA GCTTATCCGG CAGCATTTGC CCTGATGCTG CCCTTGCCCG
401 TACTGATGTT TTTCCGTCCG ..

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Number 71 ORF

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1  ..CAATCCGCCA AATGGTTATC GGGCCAAACT CTAGTCGGCA CAGCAATTGG
51  GATACGCGGG CAGATAAAGC TTGGCGGCAA CCTGCATTAC GATATATTTA
101 CCGGCCGCGC ATTGAAAAAG CCCGAATTTT TCCAATCAAG GAAATGGGCA
151 AGCGGTTTTT AGGTAGGCTA TACGTTTTAA

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Number 72 ORF

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1  ATGCGGACGA AATGGTCAGC AGTGAGAAGC TGCTTACTTG GgCGGACACC
51  GCCGACATCG ATACCGCTTT GAACCTGTTG TACCGTTTGC AAAAATCGA
101 ATTCCTCTAT GCGATGAAA ACGGTCATTC AGACGGCATC AATTTGwCGG
151 ACGAGCAATT GCCGTTGCTG ATGGAACAAT TGTCGGCAG CGGTAAGGCG
201 TTATTGGTCG ATCGGAACGG TCTGTATCTT GCCAACGCCA ATTTCCATCA
251 TGAGGCGGCG GAAGAGTTGG GGTGTGTGGC GGCAGAAGTC GCACAGATGG
301 AAAAGAAATA CCGGCTGCTG ATTAAGAACA AC..

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Number 73 ORF

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1  ATGACCTTTT TACAACGTTT GCAAGGTTTG GCAGACAATA AAATCTGTGC
51  GTTTGCATGG TTCGTCTGCC CCGCTTTGA TGAAGAACGC GTACCGCAGr

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101 CGGCGGCAAG CATGACGTTT ACGACGCTGC TGGCACTCGT CCCCGTGCTG
 151 ACCGTGATGG TGGCGGTGCG TTCGATTTTC CCCGTGTTTC ACCGCTGGTC
 201 GGATTCGTTT GTCTCCTTCG TCAACCAAC CATGTGCGG CA.GGCGGG
 251 ACATGGTGT CGACTATATC AATGCGTTCC GCGAGCAGGC GAACCGGCTG
 301 ACGGCAATCG GCAGCGTGAT GCTGGTCGTT ACCTCGCTGA TGCTGATTGG
 351 GACGATAGAC AATACGTTCA ACCGCATCTG G₂CGGGTCAA wTyCCAGGT
 401 CCGTGGATG..

Number 74 ORF

1 ..AGACACGCCC GCCGCATCG CATCGACACC GCCATCAACC CCGAACTGGA
 51 AGCCCTCGCC GAACACCTCC ACTACCAATG GCAGGGCTTC CTCTGGCTCA
 101 GCACCGATAT GCGTCAGGAA ATTTCGCCCC TCGTCATCCT GCTGCAACGC
 151 ACCCGCCGCA AATGGCTGGA TGCCACGAA CGCCAACACC TGCGCCAAAG
 201 CCTGCTTGAA ACACGGGAAC ACGGCTGA

Number 75 ORF

1 ..GCCGAAGACA CGCGGTTAC CGCACAGCTT TTGAGCGCGT ACGGCATTCA
 51 GGGCAAATC GTCAGTGTGC GCGAACACAA CGAACGGCAG ATGGCGGACA
 101 AGATTGTCGG CTATCTTTCA GACGGCATGG TTGTGGCACA GGTTCGGAT
 151 GCGGGTACGC CGGCCGTGTG CGACCCGGGC GCGAACTCG CCCGCGCGT
 201 GCGTGAGGCC GGGTTAAAG TCGTTCCCGT CGTGGGCGCA AC.GCGGTGA
 251 TGGCGGCTTT GAGCGTGGCC GGTGTGGAAG GATCCGATT TTATTCAAC
 301 GGTTTGTAC CGCGAAATC GGGAGAACGC AGGAACTGT TTGCCAAATG
 351 GGTGCGGGCG GCGTTTCTTA TCGTCATGTT TGAAACGCGG CACCGCATCG
 401 GTGCAGCGCT TGCGATATG GCGGAATGT TCCCCGAACG CCGATTATG
 451 CTGGCGCGCG AAATTACGAA AACGTTTGA ACCTTCTTA GCGGCACGGT
 501 TGGGGAAATT CAGACGGCAT TGTCTGCCGA CGGCGACCAA TCGCGCGCG
 551 AGATGGTGT GGTGCTTTAT CCGGCGCAGG ATGAAAAACA CGAAGGCTTG
 601 TCCGAGTCCG CGCAAAACAT CATGAAATC CTCACAGCCG AGCTGCGGAC
 651 CAAACAGGCG GCGGAGCTTG CTGCCAAAT CACGGGCGAG GAAAGAAAG
 701 CTTTGTACGA T..

Number 76 ORF

1 ATGAAACAA CCGACAAACG GACAACCGAA ACACACCGCA AAGCCCGGAA
 51 AACCGGTGCG ATCCGCTTCT C.GCTGCTTA CTAGCCATA TGCCTGCTG
 101 TCGGCATTCT TCCCCAAGCC TGGCGGGGAC AACTTATTT CGGCATCAAC
 151 TACCAATACT ATCGCGACTT TGCGGAAAT AAGGCAAGT TTGCAGTCGG
 201 GCGGAAAGAT ATTGAGGTTT ACAACAAAA AGGGGAGTTG GTCGGCAAT
 251 CAATGACAAA AGCCCCGATG ATTGATTTT CTGTGGTGTG GCGTAACGGC
 301 GTGGCGGcAT TGGTGGGCGT ATCAATATAT TGTGAGCGTG GCACATAACG
 351 GCGGCTATAA CAACGTTGAT TTTGGTGGG AAGGAk.AA tATCCC.GAT
 401 CAACAWCGw TTACTTATAA AATTGTGAAA CGGAATAATT ATAAAGCAGG
 451 GACTAAAGGC CATCCTTATG GCGCGGATTA TCATATGCCG CGTTTGATA
 501 AATWTGTCAC AGATGCAGAA CCTGTTGAAA TGACCAAGTA TATGGATGGG
 551 CGGAAATATA TCGATCAAAA TAATTACCCT GACCGTGTTC GTATTGGGGC
 601 AGGCAGGCAA TATTGCGGAT CTGATGAAGA TGAGCCCAAT AACCGCGAAA
 651 GTTCATATCA TATTGCAAGT
 701 GGCTC ACCAATGTTT ATCTATGATG COCAAAAGCA
 751 AAAGTGTTTA ATTAATGGGG TATTGCAAC GGGCAACCCC TATATAGGAA
 801 AAAGCAATGG CTTCCAGCTG GTTCGTAAAG ATTGGTTCTA TGATGAAATC
 851 TTTGCTGGAG ATACCCATTC AGTATTCTAC GAACCACTC AAAATGGGAA
 901 ATACTCTTTT AACGACGATA ATAATGGCAC AGGAAAAATC AATGCCAAAC
 951 ATGAACACAA TTCTCTGCCT AATAGATTAA AAACACGAAC CGTTCGAATTG
 1001 TTTAATGTTT CTTTATCCGA GACAGCAAGA GAACCTGTTT ATCATGCTGC
 1051 AGGTGGTGTG AACAGTTATC GACCCAGACT GAATAATGGA GAAAAATATT
 1101 CCTTTATTGA CGAAGGAAAA GCGGAATTGA TACTTACCAG CAACATCAAT
 1151 CAAGGTGCTG GAGGATTATA TTCCAAGGA GATTTTACGG TCTCGGCTGA
 1201 AAATAACGAA ACTTGCAAG GCGCGGGCGT TCATATCAGT GAAGACAGTA
 1251 CCGTTACTTG GAAAGTAAAC GCGTGGCAA ACGACGCGCT GTCCAAATC

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1301 GGCAAAGGCA CGCTG.....
 2101GATAAAG
 2151 TGACTGCTTC ATTGACTAAG ACCGACATCA GCGGCAATGT CGATCTTGCC
 2201 GATCAGCTC ATTTAAATCT CACAGGGCTT GCCACACTCA ACGGCAATCT
 2251 TAGTGCAAAT GCGGATACAC GTTATACAGT CAGCCACAAC GCCAGCCAAA
 2301 ACGGCAACCK TA_gCCTCGtG G.sAATGcCC AAGCAACATT TAATCAAGCC
 2351 ACATTAAACG GCAACACATC GGCTTC_gGGC AATGCTTCAT TTAATCTAAG
 2401 CGACCACGCC GTACAAAACG GCAGTCTGAC GCTTTCCGGC AACGCTAAGG
 2451 CAAACGTAAG CCATTCCGCA CTCAACGGTA ATGTCTCCCT AGCCGATAAG
 2501 GCAGTATTCC ATTTTGAAG CAGCCGCTTT ACCGGACAAA TCAGCGGGG
 2551 CA_gGATACG GCATTACACT TAAAAGACAG CGAATGGAAG CTGCCGTCA_g
 2601 Ga_rCGGAATT AGGCAATTTA AACCTTGACA ACGCAACCAT TACaCTCAAT
 2651 TCCGCTATC GCCACGATGC GGCAGGGGCG CAAACCGGCA GTGCGACAGA
 2701 TGCGCGGCGC CGCGTTCGC GCCGTTGCGC CGTTCCTTA TTATmCGTTA
 2751 CACCGCCAACT TCCGGTAGAA TCCGTTTCA ACACGCTGAC GGTAACGGC
 2801 AAATTGAACG GTCAGGGAAC ATTCCGCTTT ATGTGGAAC TCTTCGGCTA
 2851 CCGCAGCGAC AAATTGAAGC TGCGGGAAG TTCCGAAGGC ACTTACACCT
 2901 TGGCGGTCAA CAATACCGGC AACGAACCTG CAAGCCTCGA ACAATTGAOG
 2951 GTAGTGGAAG GAAAAGACAA CAAACCGCTG TCCGAAAACC TTAATTTAC
 3001 CCTGCAAAAC GAACACGTCG ATGCAGGGCG GTGG.....
 3551TTAGAC CGCGTATTTG CGAAGACCG
 3601 CCGCAACGCC GTTGGACAA GCGCATCCG GGACACCAA CACTACCGTT
 3651 CGCAAGATT CCGCGCTAC CGCAACAA CCGACCTGCG CCAATCGGT
 3701 ATGCAGAAA ACCTCGGCAG CGGCGCGTC GGCATCTGT TTTCGCACAA
 3751 CCGGACCGAA AACACCTTCG ACGACGGCAT CGGCAACTCG GCACGGCTTG
 3801 CCCACGGCGC CGTTTCGGG CAATACGGCA TCGACAGGTT CTACATCGGC
 3851 ATCAG_gCGCG GCGCGGGTT TTAGCAGCG CAGCCTTca GACGGCATOG
 3901 GAGsmAAAwT CCGCGCGCGC GTGctGCATT ACGGCATTCA GGCACGATAC
 3951 CGCGCGGgtt tC_ggCGgATt CCGCATCGAA CCGCACATCG GCGCAACGCG
 4001 ctATTTCGTC CAAAAGCGG ATTACCGCTA CGAAAACGTC AATATCGCCA
 4051 CCCC CGGCT TGCATTCAAC CGcTACCGCG CCGGCATTAA GGCAGATTAT
 4101 TCATTCAAC CCGCGCAACA CATTTCATC ACGCCTTATT TGAGCCTGTC
 4151 CTATACCGAT GCGCTTCGG GCAAAGTCG AACACGCGTC AATACCGCG
 4201 TATTGGCTCA GGATTTCGGC AAAACCGCA GTGCGGAATG GGgCGTAAAC
 4251 GCCGAAATCA AAGGTTTAC GCTGTCCCTC CAOGCTGCG CCGCCAAAGG
 4301 CCGCAACTG GAAGCGCAAC ACAGCGCGG CATCAAATTA GGCTACCGCT
 4351 GGTAA...

Number 77 ORF

1 ..AAGGTGTGGC AATTTGTGCA AGA.CCGCTG CGTGCCGTCG TGCCTGCOGA
 51 CAGTTTTGAA CCGACCGCGC AAAAATTGAA CCTGTTTAA GCGGGTGCGG
 101 CAACCATTTT GTTTTATGAA GATCAAATG TCGTCAAAGG TTTGCAGGAG
 151 CAGTTCCTG CTTATGCCGC TAACTTCCCC GTTTGGGCGg ATCAGGCAAA
 201 CGCGATGGTG CAGTATGCCG TTTGGACGAC ACTTGCGCGG GTCGGCGTAG
 251 GTGCAAACT GCAACATTAC AATCCCTTGC CGGATGCGGC GATTGCCAAA
 301 GCGTGAATA TCCCCGAAAA CTGGTTGTG CCGGCACAAA TGGTTATCGG
 351 CGGTATTGAA GGGGCGGCAG GTGAAAAGAC CTTTGAACCC GTTGCAAGAC
 401 GTTTGAAAGT GTTCGGCGCA TAA

Number 78 ORF

1 ..GGCTACAAC ACCTGTTTCG GCGCGGCAGC CGCATCGCCA ACTACCAAT
 51 CAACCGCATC CCCGTTGCCG ACGCGCTGGC CGATACGGG_g CAATGCCAAC
 101 ACCGCGCCT ATGAGCGCGT AGAAGTCGTG CGCGGCGTGG CCGGGCTGCT
 151 GGAAGGCACG GCGGAGCCTT CCGCAACCGT CAATCTGGTG CGCAACGCC
 201 TGACCGCAA GCCATTGTTT GAAGTCCGCG CGAAGCGgG CAACCGcAAA
 251 CATTTCGGGC TGGACGCGGA CGTATCGGGC AGCCTGAACA CCGAAG.crC
 301 rCTGCGCGcG CCGCTGGTTT CCAcCTTCGG ACGCGGCGAC TCGTGGCGGC
 351 GGCGCGAACG CAGCGGskAT GCCGAACTCT ACGGCATTTT GGAATACGAC
 401 ATCGCACCGC AAACCCGCGT CCACGCArGC ATGGACTACC AGCAGGCGAA

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451 AGAAACCGCC GACGCGCCG TCAGcTACGC CGTGTACGAC AGCCAAGGTT
 501 ATGCCACCGC CTTCCGCCCCG AAAGACAACC CCGCCACAAA TTGGGCGAAC
 551 AGCCACCACC GTGCGCTCAA CCTGTTGCGC GGCATCGAAC ACCGCTTCAA
 601 CCAAGACTGG AAACCTCAAAG CCGAATACGA CTAC..

Number 79 ORF

1 ATGCGCACGG CAGTGGTTTT GCTGTTGATC ATGCCGATGG CGGCTTGGTC
 51 GGCAATGATG CCGGAAATGG TGTGCGCGGG CGTGTGCGCG GGAACGGCAA
 101 TCATATCCAA GCGGACCGAA CAAACGGGGG TCATGGCTTC GAGTTTGTCC
 151 AGCGTCAGcA CGCTGCTTC GCGGcGgCa ATCATACCTT CGTCTTGGGA
 201 AACGGGGATA AACGcGCCAC TCAAACCCCC GACGCGCTG GAAGCCATCA
 251 TGCCGCCTTT TTTCAGGCA TCGTTCAGCA ATGCCAAAGC TGCTGTTGTG
 301 CCGTGCCTAC CGCAGACGCT CAAGCCCAT TTTCAAGAA TGCGTGCCAC
 351 TTAGTCGCGG ACGGGG..

Number 80 ORF

1 ..ACCGACGTGC AAAAAGAGTT GGTGCGGGA CAACGCAAGT GGGCGCAGGA
 51 AAAAAATCAGC AACTGCCGAC AAGCCGCCG GCAGGCAGAC CGGCAGGAAT
 101 ACGCCGAATA CCTCAAGCTG CAATGCGACA CGCGGATGAC GCGCGAACGG
 151 ATACAGTATC TCGCGGGCTA TTCCATCGAT TAG

Number 81 ORF

1 ATGCAGCTGA TCGACTATTC ACATTCATTT TTCTCGGTTG TGCCACCCCTT
 51 TTTGGCACTG GCACTTGCCG TCATTACCG CCGCGTACTG CTGTCTTTAG
 101 GCATCGGTAT TCTGGWysGC GTTGCCTTTT TGGTCGGGG CAACCCCGTC
 151 GACGGTCTGA CACACCTGAA AGACATGGTC GTCGGCTTGG CTGTTGTCAGA
 201 CGsyGATTGG TCGCTGGGCA AACCAAAAAT CTTGGTTTTT CkGATACTTT
 251 TGGGTATTTT TACTTCCTG CTGACCTACT CCGGCAGCAA T.....
 //
 851AC TTCGCTGSTA
 901 TTCGCGGCA CTTGCGGCGT CTTTGCCGTC GTTCTCTGCA CGCTCGGCAC
 951 GATTAAACC GCGACTATC CCAAAGCCGT TTGGCAGGGT GCGAAATCTA
 1001 TGTTGCGGCG AATCGCCATT TTAATCCTCG CTTGGCTCAT CAGTACGGTT
 1051 GTCGGCGAAA TGCACACCGG CGATTACCTC TCCACACTGG TTGCGGGCAA
 1101 CATCCATCCC GGCTTCTGTC CCGTCATCCT CTTCCTGCTC GCCAGGTGA
 1151 TGCGCTTTGC CACAGGCACA AGCTGGGGGA CSTTGGCAT TATGCTGCCG
 1201 ATTGCCGCGC CCATGGCGGT CAAAGTCGAA CCGGCGCTGA TTATCCCGTG
 1251 TATGTCCGCA GTAATGGCGG GGGCGGTATG CCGCGACCAC TGCTCGCCCA
 1301 TTTCCGACAC GACCATCTG TCGTCCACCG GCGCGCGCTG CAACCACATC
 1351 GACCACGTTA CCTCGCAACT GCCTTACGCC TTAACCGTTG CCGCGCGCGC
 1401 CGCATCGGGC TACCTGCGAT TGGGTCTGAC AAAATCCGCG CTGTTGGGCT
 1451 TTGGCACGAC AGGCATTGTA TTGGCGGTGC TGATTTTTCT GTTGAAAGAT
 1501 AAAAAA..

Number 82 ORF

1 ..AAGCAATGGT ATGCCGACGN .AGTATCAAG ACGGAAATGG TTATGGTCAA
 51 CGATGAGCCT GCCAAAATTC TGAATTGGGA TGAAAGCGGC CGATTACTCT
 101 CGGAAGTGT TATCGCCAC CATCAACGCA ACGGGTGGT TTGGAGTGG
 151 TATGAAGATG GTTCTAAAAA GAGCGAAGT. GTTTATCAGG ATGACAAGTT
 201 GGTCAGGAAA ACCCAGTGGG ATAAGGATGG TTATTTAATC GAACCCTGA

Number 83 ORF

1 ATGAAACAGA CAGTCAA.AT GCTTGCGGCC GCCCTGATTG CCTTGGGCTT
 51 GAACCGACCG GTGTGNGCG ATGACGTATC GGAATTTTCG GAAACTTGG

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101 A.GCGGCAGC ACAGGGAAAT GCAGCAGCCC AATACAATTT GGGCGCAATG
 151 TAT.TACAAA GGACGCGCGT GCGCCGGGAT GATGCTGAAG CGGTGAGATG
 201 GTATCGGCAG CCGGCGGAAC AGGGGTTAGC CCAAGCCCAA TACAATTTGG
 251 GCTGGATGTA TGCCAACGGG CGCGC.GTGC GCCAAGATGA TACCGAAGCG
 301 GTCAGATGGT ATCGGCAGGC GGCAGCGCAG GGGGTTGTCC AAGCCCAATA
 351 CAATTTGGGC GTGATATATG CCGAAGGACG TGGAGTGCGC CAAGACGATG
 401 TCGAAGCGGT CAGATGGTTT CGGCAGGCGG CAGCGCAGGG GGTAGCCCAA
 451 GCCCAAAACA ATTTGGGCGT GATGTATGCC AAGANCGC GCGTGCGCCA
 501 AGACCG...

Number 84 ORF

1 ATGAAATTTA CCAAGCACCC CGTCTGGGCA ATGGCGTTCC GCCCATTTTA
 51 TTCGCTGGCG GCTCTGTACG GCGCATTGTC CGTATTGCTG TGGGGTTTCG
 101 GCTACACGGG AACGCACkAG CTGTCCGGTT TCTATTGGCA CGCGCATGAg
 151 ATGATTTGGG GTTATGCCGG ACTGGTCGTC ATCGCCTTCC TGCTGACCGC
 201 CGTCGCCACT TGGACGGGGC AGCCGCCAC GCGGGGCGGC GTaTCTGGTC
 251 GGCTTGACTA TCTTTTGGCT GGCTGCGCGG ATTGCCGCCT TTATCCCGGG
 301 TTGGGGTGCG TCGCAAGCG GCATACTCGG TACGCTGTTT TTCTGGTACG
 351 GCGCGGTGTG CATGGCTTTG CCGTTATCC GTTCGCAGAA TCAACGCAAC
 401 TATGTTgCCG TGTTGCGGCT GTTCGTCTTG GCGGCACGC ATGCGGCGTT
 451 CCACGTCCAG CTGCACAACG GCAACCTAGG CGGACTCTTG AGCGGATTGC
 501 AGTCGGGCTT GGTGATG

Number 85 ORF

1 ..ATGCCGCTG AAGGTTcAGA CGGcmTCGGT GyCGGGGAay CAGAAGyGGT
 51 AGCGCATGCC CAATGAGACT TCGTGGGTTT TGAAGCGGGT GTTTTCCAAG
 101 CGTCCCCAGT TGTGGTAACG GTATCCGGTG TCyAArGTCA GCTTGGGyGT
 151 GATGTCGAaa CCGACACCGG CGATGACACC AAGACCyAmG CTGCTGATrC
 201 TGTkGCTTTC GTGATAGGsA GGTtTGyTGG kmksAsyTTG TAyrATwkkG
 251 CCTssCwsTG kAGmGCCkTk CkyTGGTkkA swGrwArTAG TCGTGGTTTy
 301 TkTtyyCACC GAATGAACyT GATGTTTAAc GTGTCCGTAG GCGACGCGCG
 351 CGCCGATATA GGGTTTGAAT TTATCGTTGA GTTTGAAATC GTAAATGGCG
 401 GACAAGCCGA GAGAAGAAAC GGCCTGGAAG CTGCCGTTTC CCTGATGTTT
 451 TGTTTGGGTT TCTTTGTAGT TGTTGTTTAT CTCTTCAGTA ACTTTTtTAG
 501 TAGAAGAATT ACTTTCTTTC CATTTTCTGt AACTGGCATA ATCTGCGGCT
 551 ATTCTCCAGC CGCCGAAATC ..

Number 86 ORF

1 ATGTTTGCTT TTTTAGAAGC CTTTTTTGTC SAATACGGTT ATGCGGCTGT
 51 TTTTTTTGTA TTGGTCATCT GCGGTTTCGG CGTGCCGATT CCCGAGGATT
 101 TGACCTTGGT AACAGGCGGC GTGATTTCGG GTATGGGTTA TACCAATCGG
 151 CATATTATGT TTGCAGTCGG TATGCTCGGC GTATTGGTGG GGGACGGCAT
 201 CATGTTTCGCC GCCGGACGAA TTTGGGGGCA GAzArTCCTA rGGTTCArAC
 251 CTATTGCGsG CATCATGACG CCGrAACGTT ATGAGCAGGT TCAGGAAAAA
 301 TTCGACAAAT ACGGTAACTG GGTCTTATTT GTCGCCCGTT TCCTGCCCGG
 351 TTTGAGAACG GCCGTATTTG TTACAGCGCG TATCAGCGCG AAGGTTTCAT
 401 ACTTGCGTTT TATCATTATG GATGGACTGG CCGCA...

Number 87 ORF

1 ATGAAAAAAT TATTGGCGGC CGTGATGATG GCAGGTTTGG CAGGCGCGGT
 51 TTCCGCCGCC GGAGTCCACG TTGAGGACGG CTGGGCGCGC ACCACCGTCG
 101 AAGGTATGAA AATAGGCGGC GCGTTCATGA AATCCACAA CGACGAAGCC
 151 AAACAAGACT TTTTGCTCGG CGGAAGCAGC CCCGTTGCCG ACCCGGTGGA
 201 AGTGCAATACC CACATCAACG ACAACGGCGT GATGCGGATG CGCGAAGTCG
 251 AAGGCGGCGT GCCTTTGGAA GCGAAATCCG TTACCGAACT CAAACCCGGC
 301 AGCTATCATG TGATGTTTAT GGGTTTGAAA AAACAATTAA AAGAGGGCGA
 351 TAAATTCOC GTTACCCGTA AATTTAAAAA CGCCAAAGCG CAAACCGTCC

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401 AACTGGAAGT CAAAATGCGC CCGATGCCGG CAATGAACCA C...

Number 88 ORF

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1 ATGACGGTAA CTGCGGCCGA AGGCGGCAAA GCTGCCAAGG CGTTAAAAAA
51 ATATCTGATT ACGGGCATT TGGTCTGGCT GCCGATTGCG GTAACGGTTT
101 GGGTGGTTTC CTATATCGTT TCCGCGTCCG ATCAGCTCGT CAACCTGCTG
151 CCGAAGCAAT GGCGGCCGCA ATATGTTTGG GGGTTTAATA TCCCGGGGCT
201 GGGCGTTATC GTTGCCATTG CCGTATTGTT TGTAAACCGA TTGTTGCGG
251 CCAACGTATT GGGTCGGCAG ATCCTCGCCG CGTGGGACAG CCTGTGGGGG
301 CGGATTCCGG TTGTGAAATC CATCTATTCT AGTGTGAAAA AAGTATCCGA
351 ATAcgTGCTG TCCGACAGCA GCCGTTCTGT TAAAACGCCG GTAGTCGTGC
401 CGTTTCCCCA GCCCGGTATT TGGACGATyG CTTTCGTGTC AGGGCAGGTG
451 TCGAATGCCG TTAAGGCCGC ATTGCCGAAs GACGGCGATT ATCTTTCCGT
501 GTATGTTCCG ACCACGCCGA ATCCGACCGG CGGTACTAT ATTATGGTAA
551 AGAAAAGCGA TGTGCGCGAA CTCGATATGA GCGTGGACGA AsCATTGAAA
601 TATGTGATTT CGCTGGGTAT GGTCAATCCCT GACGACCTGC CCGTCAAAAC
651 ATTGGCAsGA CCTATGCCGT CTGAAAAGGC GGATTGCCC GAACAACAAT
701 AA

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Number 89 ORF

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1 ATgAAAACGG TAGTCTGGAT TGTCGTCTCG TTTGCCGCGG CCGTCCGACT
51 GCGCGTGGCT TCGGGCATT ACACCGGCGA CGTGTATATC GTAGTCGGAC
101 AGACCATGCT CAGAATCAAC CTGCACGCCT TTGTGTTAGG TTCGCTGATT
151 GCCGTGCTGG TGTGGTATTT CTTGTTTAAA TTCATTATCG GgGgTACTCA
201 ATATCCCGA AAAGATGCAG CGTTTCGGTT CGGCnCGTAA AGGCCkCAAG
251 ssCGsGCTTG CCTTGAACAA GGCGGGTTTG GCGTATTTTG AAGGGCGTTT
301 TGAAAAGGCG GAAGTAGAAG CCTCACGCGT GTTGGTCAAC AAAGtAGGCC
351 GgGAGACAAC CGGACTTTGG CATTGATGCT GrGCGCGCAC GCCCGCGGAC
401 AGATGGAAAA CATCGAsTG CGCGACCGTT ATCTTGCGGA AATCGCCAAA
451 CTGCCGGAAA AACAGCAGCT TTCCCGTTAT CTTTGTGTGG CGGAATCGGC
501 GTTGAACCGG CGCGATTACG AAGCGGCGGA AGCCAATCTT CATGCGGCGG
551 CGAAGATGAA TGCCAACCTT ACGCGCCTCG TGCGTCTGCA .ATTGTTAC
601 GCTTTCGACA GGGCGCACGC GTTGCAAGTT CTGGCAAAAA CCGAAAAACT
651 TTCCAAGGCG GGCGCGTTGG GCAAATCGGA AATGGAACGG TATCAAAATT
701 GGCATATCC GTCCGCAGCT GGCGGATGCT GCCGATGCCG CCGCTTTGAA
751 AACCTGCCGTG AAGCGGATTC CCGACAGCCT CAAAAACGGG GAATTGAGCG
801 TATCGGTTGC GGAAGAATAC GAACGTTTGG GACTGTATGC CGATGCGGTC
851 AAATGGGTCA AACAGCATT TCCGCAsAAC CGCGGCCCG AGCTTTTGGA
901 AGCCTTTGTC GAAAGCGTGC GCTTTTGGG CGAGCGCGAA CAGCAGAAAG
951 CCATCGATTT TGCCGATGCT TGGCTGAAAG AACAGCCCGA TAACGCGCTT
1001 CTGCTGATGT ATCTCGGTG GCTCGCCTTC GGCGGCAAA TTTGGGGCAA
1051 GGCAAAAGGC TACCTTGAAG CGAGCATTGC ATTAAAGCCG AGTATTTCGG
1101 CGCGTTTGGT TCTAACAAAG GTTTTCGACG AAATCGGAGA ACCGCAGAAG
1151 GCGGAGGCGC AC...

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Number 90 ORF

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1 ATGATGTTTT CTTGGTTCAA GCTGTTTCAC TTGTTTTTTG TCATTTCGTG
51 GTTTGCAGGG CTGTTTACC TGCCGAGGAT TTTGCTCAAT ATGGCGATGA
101 TTGATGTGCC GCGCGGCAAT CCCGAGTATG TGCGTCTGTC GGGCATGGCG
151 GTGCGGCTGT ACCGTTTTAT GTCGCCGTTG GGCTTCGGCG CGGTGCTGTT
201 CGGCGCGGCG ATACCGTTTG CGCGCGGCTG GTGGGGCAGC GGCTGGGTAC
251 ACGTCAAAC GTGTTTGGGC TTGATGCTCT TGGCTTACCA GTTGATTGC
301 GCGGTGCTGC TGCGCCGTTT TCAGGATTAC AGCAATGCTT TTTACACCG
351 CTGGTACCGC GTGTTCAACG AAATCCCGT GCTGCTGATG GTTGCCGCGC
401 TGTATsTGGT CGTGTTCAA CCGTTTGA

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Number 91 ORF

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1 ATGGCAAAAA TGATGAAATG GCGGGCTGTT GCGGCGGTG CGGCGGCAGC
51 GGTTCGGGGC GGATGGTCTT AACTGAAGCC CGAGCCGCAC GTGCTTGATA
101 TTACGGAAAC GGTCAAGGCG GGC // .....
//... ATTCGTTTA CGATTTTGTG CGAACCGGAT ACGCCGATTA AGGCGAAGCT
51 CGACAGCGTC GACCCCGGGC TGACCAAGAT GTCGTCGGGC GGTACAAACA
101 GCAGTACGGA TACGGCTTCC AATGCGGTCT ACTATTATGC COGTTCGTTT
151 GTGCCGAATC CGGACGGCAA ACTCGCCACG GGGATGACGA CGCAGAATAC
201 GGTGAAATC GACGGGTGA AAAATGTGCT GATTATCCG TCGCTGACCG
251 TGAAAAATCG CGGCGGCAAG GCGTTTGTG GCGTGTGGG TCGGACGGC
301 AAGGCGGCGG AACCGGAAAT CCGGACCGGT ATGAGAGACA GTATGAATAC
351 CGAAGTAAAA AGCGGGTTGA AAGAGGGGGA CAAAGTGGTC ATCTCCGAAA
401 TAACGCCCGC CGAGCAACAG GAAAGCGGCG AACGCGCCCT AGGCGGCCCG
451 CCGCGCCGAT AA

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Number 92 ORF

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1 ..ATTCCCGCCA CGATGACATT TGAACGCAGC GGCAATGCTT ACAAATCGT
51 TTCGACGATT AAAGTGCCGC TATACAATAT CCGTTTCGAG TCCGGCGGTA
101 CGGTTGTGGC CAATACCCTG CACCCTACCT ACTATAGAGA CATACGCAGG
151 GGCAAATGT ATGCGGAAGc CAAATTCGCC GACgGcAGCG TAACTTACGG
201 CAAAGCGGGC GAGAGCAAAA CCGAGCAAAG CCCCAAGGCT ATGGATTGTG
251 TCACGCTTGC CTGGCAGTTG GCGGCAAAATG ACGCGAAACT CCCCCCGGGG
301 CTGAAAATCA CCAACGGCAA AAAACTTTAT TCCGTGCGCG GTTTGAATAA
351 GCGCGGTACA GGAATAATCA GCATAGGCGG CGTGGAAACC GAAGTCGTCA
401 AATATCGGT GCGGCGCGC GACGATGCGG TAATGTATT CTTCGCACCG
451 TCCCTGAACA ATATTCCGGC ACAAATCGGC TATACCGACG ACGGCAAAAC
501 CTATACGCTG AACTCAAAT CCGTGCAGAT CAACGGCCAG GCAGCCAAAC
551 CGTAA

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Number 93 ORF

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1 ATGTATCGGA GGAAAGGGCG GGGCATCAAG CCGTGGATGG GTGCCGGTGC
51 .GCGTTTGCC GCCTTGGTCT GGCTGGTTT CGCGCTCGGC GATACTTTGA
101 CTCGTTTGC GGTTCGGCGG GTGCTGGCGT ATGTATTGGA CCCTTTGGTC
151 GAATGGTTGC AGAAAAAGGG TTTGAACCGT GCATCGGCTT CGATGTCTGT
201 GATGGTGTG TTCTTGATT TGTGTTGGC ATTATTGTTG ATTATCGTCC
251 CTATGCTGGT CGGGCAGTTC AACAATTTGG CATCGCGCT GCGCCAAATTA
301 ATCGGTTTTA TGCAGAACAC GCTGCTGCGG TGGTTGAAAA ATACAATCGG
351 CGGATATGTG GAAATCGATC AGGCATCTAT TATTGCGTGG CTTCAGGGCG
401 ATACGGGAGA GTTGAACAAC GCGCTTAAGG CGTGGTTTCC CGTTTTGATG
451 AGGCAGGGCG GCAATATT..

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Number 94 ORF

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1 ..ACTGCTTTT CCGCGGCGCT GCGCTTGAGT CCATCATGAC TCGTCATATT
51 TTTGTCCTTT GGGAAACCGT ATCAACAAAC AGCGGCCATC TTAACATTTT
101 TTTGCACGTC CTGCCCAGCG CGTTCAAATG CGTACCAGCA ATACCGCGC
151 CTGCGCTCT ATGCCTTCCA TCGGCGCGAG ATAGCCGAGT TTTTCGTTGG
201 TTTTGCTTT GATGTTGACG CACGAAATGT CTATGCCCAA ATCGGGGCG
251 ATGTTGGCAC GCATTGCGG AATGTGCGG GCGAGTGTGG GTTTCGTGTC
301 AATCAGGTC GTATCGACAT TGACCGCTG CCAACCTGC GCCTGAACGC
351 TTTGATACGC CGCACGCAA AGGACGCGC TGTGCGATC TTTGAACCT
401 GCGGCGGTG CGGGGAATG GCTGCGGATA TCGCCCAAAC CTGCGCACCC
451 GAGCAGCGG TCGGTAACGG CGTGACGACG CGCATCGGCA TCGGAGTGTG
501 CGAGCAGCCC TTTTCAAAT GGGATTTCAT CTCGCCAAG TATCAG..

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Number 95 ORF

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1 ..GCCGGCGGA GTGCGAACAA CATTTGCGG CGTTTTGCGG AAACACCGT

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51 CGCTGTCAGC GTTACCOCTGA TCGGCACGGT ACTTGCCGTC ATGCTGCCCG
 101 TTACCGAATA TGAAACTTC CTGCTGCTTA TCGGCTCGGT ATTGCGCGG
 151 ATGGGGCGGA TTTGATTGC CGACTTTTTC GTCTTGAAAC GCGGTGA

Number 96 ORF

1 ATGACCCGTA TCGOCATCCT CGGCGGCGGC CTCTCGGGAA GGCTGACCGC
 51 GTTGACGCTT GCAGAACAAG GTTATCAGAT TGCACTTTTT GATAAAGCT
 101 GCCGCCGGGG CGAACACGCC GCCGCCTATG TAGCCGCCGC CATGCTCGGG
 151 CCTGCAGCGG A.ACGGTGGA AGCCACGCCC GAAGTGGTCA GGCTGGGCG
 201 GCAGAGCATC CCGCTTTGGC GCGGCATCCG ATGCCGTCTG AACACGCACA
 251 CGATGATGCA GGAAACCGGC AGCCTGATTG TATGGCACGG GCAGGACAAG
 301 CCATTATCCA GCGAGTTGCT CCGCCATCTC AAACGCGGCG GCGT.ACGGA
 351 TGACGAAATC GTCCGTGGC GCGCCGAAGA CATCGCCGAA CGCGAACCGC
 401 AACTCGGCGG ACGTTTTTAA GACGGCATCT ACCTGCCGAC CGAAGC.CAG
 451 CTCGACGGGC GGCAATTATA GTCTGCACTT GCCGACGCTT TGGACGAACT
 501 GAACGTCCCC TGCCATTGGG AACAGGAATG CGTCCCGGAA GCCTGCAAG..

Number 97 ORF

1 ATGACTGATA ATCGGGGGTT TACGCTGGTT GAATTAATAT CAGTGGTCTT
 51 GATATTGTCT GTACTTGCTT TAATTGTTTA TCGAGCTAT CGCAATTATG
 101 TTGAGAAAGC AAAGATAAAT GCAGTGGGG CAGCCTTGTT AGAAATGCA
 151 CATTTTATGG AAAAGTTTTA TCTGCAGAAAT GGGAGGTTTA AACAAATC
 201 TACCAAGTGG CCAAGTTTGC CGATTAAAGA GGCAGAAGGC TTTGTATCC
 251 GTTTGAATGG AATCGTGGC CGGG..GCTT TAGACAGTAA ATTCATGTTG
 301 AAGGCGGTAG CCATAGATAA AGATAAAAT CTTTTATTA TTAAGATGAA
 351 TGAAATCTA GTAACCTTTA ATTTGCAAGA AGTCCGCCAG TTCGTGTAGT
 401 GACGGGCTGG ATTATTTTAA AGGAAATGAT AAGGACTGCA AGTTACTTAA
 451 GTAG

Number 98 ORF

1 ..GTGCTGCTGG CTTOGGTGAT TGCCTCTCAA ATCTTCCTTT ACGAAGATT
 51 CAACCAAATG CGGAAAACCG GTGGAGCTAT CTGGGTTTTT CTTGTCCAAT
 101 ATTATCTGG GGTTCAGCA GGGGTATTTC GATTTGAGTG CCGACGAGAA
 151 CCCCGTACTG CATATCTGGT CTTGGCAGT AGAGGAACAG TATTACCTCC
 201 TGTATCCCT TTTGCTGATA TTTGCTGCA AAAAAACCAA ATCGCTACGG
 251 GTGCTGCGTA ACATCAGCAT CATCCTGTTT TTGATTTTGA CTGCCTCATC
 301 GTTTTTGCCA AGCGGGTTTT ATACCGACAT CCTCAACCAA CCCAATACTT
 351 ATTACCTTTC GACACTGAGG TTCCCGAGC TGTGGCAGG TTGCTGCTG
 401 GCGGTTTACG GGCAACGCA AAACGGCAGA CGGCAACAG CAAATGGAAA
 451 ACGGCAGTTG CTTTCATCAC TCTGCTTCGG CGCATTGCTT GCCTGCCTGT
 501 TCGTGATTGA CAAACACAAT CCGTTTATCC CGGGAATGAC CCTGCTCCTT
 551 CCTGCTGTC TGACGGCACT GCTTATCCGG AGTATGCAAT ACGGGACACT
 601 TCCGACCCGC ATCCTGTGG CAAGCOCCAT CGTATTTGTC GGCAAAATCT
 651 CTTATTCCCT ATACCTGTAC CATTTGGATT TTATTGCTTT CGCTCGCTC
 701 ATTAGAGGCG GGAAACAGCT CGGACTGCCT GCCG..

Number 99 ORF

1 ..ATTATTTACG AATACGCTG GATGTTTCTT TACGGCGCAC TGAOGACCTT
 51 GGGCTGACG GTCGTGGCAA C.GCGGGCGG TTCGGTATTG GGTCTGTTGT
 101 TGGCGTTGGC GCGCCTGATT CACTTGAAA AAGCCGGTGC GCCGATGGC
 151 GTGCTGGCGT GGGCGTTGCG TAAAGTTTCG CTGCTGTATG TTACGCTGTT
 201 CCGGGGTACG CCGCTGTTG TGCAGATTGT GATTGGGCG TATGTGTGGT
 251 TTCCGTTTTT CGTC..

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Number 100 ORF

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1  ..CTGAAAGAAT GCCGTCTGAA AGACCCTGTT TTTATTCCAA ATATCGTTTA
51  TAAGAACATC GCCATTACTT TCCTGCTCTT GCAAGCCGCC GCGGAACCTT
101 GGCTGCCCGC GCAAACCGCC GGTTTTACCG CGCTCGCGT CCGCTTCATC
151 CTGCTCGCCA AGCTGCGTGA gCTTCACCAT CACGAACCTT TACGTAACA
201 cTACGTCCG ACTTATTACy TGCTCCAAC TTTTGCCGCC GCAGgCTAgT
251 TTGTGGACAG GCGCGGCGwA ATTACAAAAC CTGCCCGCyT CCGCGCCCTT
301 GCACCTGATT ACCCTCGGCG GCATGATGGG CGGCGTGATG ATGGTGTGGc
351 TGACCGCCGG ACTGTGGCAC AGCGGCTTTA CCAAACTCGA CTACCCCAAA
401 CTCTGCCGCA TTGCCGTCCC CATCCTTTTC GCCGCCGCCG TCTCGCGCGC
451 TTTCTTGCTG AACGTGAACC CGTATTATTT CATTACCGTT CCGCGGATTC
501 TGACCGCCCG CGTATTGCTA CTGTATCTTT TCCTGTTTAT ACCGATATTT
551 CGGGCGAATG CGTTTACAGA CGATCCGGAx TAx

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Number 101 ORF

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1  ATGGAATTC GGGCAATAAA ATATACGGCA ATGGCTGCGT TGCTTGCAAT
51  TACGGTTGCA GGCTGCGGC TGCGGGGTG GTATGAGTGT TCGTCCCTCA
101 CCGGCTGTTG TAAGCCGAGA AAACCGGCTG CCATCGATT TGGGATATT
151 GCGCGCGAGA GTCGCGCTC TTAGGGGAC TACGAGATAC CGCTTCAGA
201 CGGCAATAGT TCCGTGAGG CAAACGAATA TGAATCCGA CAACAATCTT
251 ACTTTTACAG GAAATAGGG AAGTTGAAG C.TGCGGGCT GGATTGGCGT
301 ACGCGTGACG GCAAACCTTT GATTGAGACG TTCAAACAGG GAGGATTGTA
351 CTGCTTGAA AAG..

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Number 102 ORF

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1  ATGAAACACA TCCATATTAT CGGTATCGGC GGCACGTTTA TGGGCGGGCT
51  TGCCGCCATT GCCAAGAAG CGGGTTTGA AGTCAGCGT TCGACGCGA
101 AGATGTATCC GCCGATGAGC ACCAGCTCG AAGCCTTGGG TATAGACGTG
151 TATGAAGGCT TCGATGCGC TCAGTTGGAC GAATTTAAAG CCGACGTTTA
201 CGTTATCGGC AATGTGCCA AGCGCGGAT GGATGTGGT GAAGCGATTT
251 TGAACCTCGG CTGCCTTAT AttTcCGGCC CGCAATGGCT GTCGGAAAAC
301 GTGCTGCACC ATCATTGGGT ACTCGGTGTG GCGGGGACgC ACGGCAAAAC
351 GACCACCGCC TCCATGCTCG CATGGGTCTT GGAATATgCC GGCCTCGGCG
401 CCGGCTTCTT TATtGGCGGC GTACC.GGAA AATtCGGCG TTTCCGCCCC
451 CTGCGCGCAA ACGCGCGCC AAGACCGAA CAGCCAATCG CCGTTTTTcG
501 TCATCGAAGC CGACGAATAC GACACCGCT TtTCGACAA ACGTTCTAAA
551 TtCGTGCAAT ACCGTCCGCG TACCGCGTG TTGAACAATC TGGAAATCGA
601 CCACGCCGAC ATCTTTGCG ACTTGGGCGC GATACAGAc CAGTTCCACT
651 ACCTCGTGG TACCGTGCG TCTGAAGCT TAATCGTCTG CAACGGACGG
701 CAGCAAAGCC TGCAAGATAC TTTGGACAA GGCTGCTGGA CGCCGGTGA
751 AAAATTCGGC ACGGAACAG GCTGGCA..

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Number 103 ORF

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1  ..CCGGCTATT ACGGCTCGGA TGACGAATTT AAGCGGGCAT TCGGAGAAAA
51  CTCGCCGACA TmCAAGAAAC ATTGCAACCG GAGCTGCGGG ATTTATGAAC
101 CCGTATTGAA AAAATACGGC AAAAAGCGCG CCAACAACCA TTCGGTCAGC
151 ATTAGTGCGG ACTTCGGCGA TTATTTCAAT CCGTTCGCCA GCTATTCGCG
201 CACACACCGT ATGCCCAACA TCCAAGAAAT GTATTTTCC CAAATCGGCG
251 ACTCCGGCGT TCACACCGCC TTAARCCAG AGCGCGCAA CACTTGGCAA
301 TTTGGCTTCr ATACCTATAA AAAAGGATTG TTAACAACAG ATGATACATT
351 AGGATTAAAA CTGGTCGGCT ACGCAGCCG CATCGACAAC TACATCCACA
401 ACGTTTACGG GAAATGGTGG GATTTGAAAG GGGATATTCC GAGCTGGGTC
451 AGCAGCACCG GGCTTGCTTA CACCATCCAA CATCGCrATT TCawAGACAA
501 AGTGCAATCA nnnnnnnnnn nnnnnnnnnn nnnnTACGAT TATGGGGGTT
551 TTTTACCAA CCTTCTTAC GCCTATCAA AAAGCAACGA ACGACCAAC
601 TTCAGCGATG CGAGCGAATC GCCCAACAAT GCGTCCAAAG AAGACCAACT
651 CAAACAAGGT TATGGGTTGA GCAGGGTTTC CGCCTGCGG CGAGATTAG
701 GACGTTTGA AGTCGGTACG CGCTGGTTGG GCAACAACCT GACTTTGGGC

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751 GCGCGATGC GCTATTTGCG CAAGAGCATC CGCGCGACGG CTGAAGAAAG
801 CTATATCGAC GGCACCAACG GGGGAAATAC CAGCAATTC CGGCAACTGG
851 GCAAGCGTTC CATCAACAA ACOGAAACTC TTGCCCGCCA GCCTTTGATT
901 TTWGATTTA ACGCGGCTTA CGAGCOGAAG AAAAACCTTA TTTTCGGGCG
951 CGAAGTCAAA AATCTGTTCG ACAGGCGTTA TATCGATCG CTCGATGCGG
1001 GCAATGATGC GGCAAC.GAG CGTTATTACA GCTCGTTCGA CCCGAAAGAC
1051 AAGGACrrAG ACGTAACGTG TAATGCTGAT AAAACGTTGT GCaACGGCAA
1101 ATACGGCGGC ACAAGCAAAA GCGTATTGAC CAATTTTGCA CGCGGACGCA
1151 CCTTTTgAT GACGATGAGC TACAAGTTT AA

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Number 104 ORF

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1 ATGAACCTGA TTTACGTTA CATCATCGT CAAATGGCGG TTATGGCGGT
51 TTACGCGCTC CTTGCCTTCC TCGCTTTGTA CAGCTTTTTT GAAATCCTGT
101 ACGAAACCGG CAACCTCGGC AAAGGCAGTT ACGGCATATG GGAAATGCTG
151 GGCTACACCG CCCTCAAAAT GCCCGCCCGC GCCTACGAAC TGATTCCCT
201 CGCCGTCCCT ATCGCGGGAC TGGTCTCCCT CAGCCAGCTT GCGCGCGCA
251 GCGAACTGAC CGTCATCAA GCCAGCGGCA TGAGCACCAA AAAGCTGCTG
301 TTGATTCTGT CGCAGTTCGG TTTTATTTTT GCTATTGCCA CGTCGCGCT
351 CGGCGAATGG GTTGCGCCCA CACTGAGCCA AAAAGCCGAA AACATCAAG
401 CGCCGCCAT CAACGGCAA ATCAGCACCG GCAATACCGG CCTTTGGCTG
451 AAAGAAAAA ACAGCGTGAT CAATGTGCGC GAAATGTTGC CCGACCAT..

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Number 105 ORF

```

1 ATGAAACTTC TGACCACGC AATCCTGTCT TCCGCAATCG CGCTCAGCAG
51 TATGGCTGCC GCCGTGGCA CGGACAACCC CACTGTTGCA AAAAAACCG
101 TCAGTACGT CTGCCAGCAA GGTAAAAAG TCAAAGTAAC CTACGGCTTC
151 AACAAACAGG GTCTGACCAC ATACGCTTCC GCCGTATCA ACGGCAACG
201 CGTGCAAATG CCTGTCAATT TGGACAAATC CGACAATGTG GAAACATTCT
251 ACGGCAAAGA AGGCGTTAT GTTTGGGTA CCGCGTGAT GGATGGCAA
301 TCCTACCGCA AACAGCCAT TATGATTACC GCACTGACA ACCAAATCGT
351 CTTCAAAGAC TGTCCCCAC GTTAA

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Number 106 ORF

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1 ..ACACTGTTGT TTGCAACGGT TCAGGCAAGT GCTAACCAAT GAAGAGCAAG
51 AAGAAGATT ATATTTAGAC CCGTACAAC GCACTGTTGC CGTGTGATA
101 GTCAATTCCG ATAAAGAAG CACGGGAGAA AAAGAAAAAG TAGAAGAAAA
151 TTCAGATTGG GCAGTATATT TCAACGAGAA AGGAGTACTA ACAGCCAGAG
201 AAATCACCyT CAAAGCCGGC GACAACCTGA AAATCAAACA AAACGGCACA
251 AACTTCACCT ACTCGCTGAA AAAAGACCTC AcAGATCTGA CCAGTGTGG
301 AACTGAAAAA TTATCGTTTA GCGCAAACGG CAATAAAGTC AACATcACAA
351 GCGACACCAA AGGCTTGAAT TTTGCGAAAG AAACGGCTGG sACGAACGyC
401 GACACCACGG TTCATCTGAA CGGTATTGGT TCGACTTTGA CCGATAOGCT
451 GCTGAATACC GGAGCGACCA CAAACGTAAC CAACGACAAC GTTACCGATG
501 ACGAGAAAAA ACGTGGCGCA AGCGTTAAAG ACGTATTAAA CGCTGGCTGG
551 AACATTAAAG GCGTTAAACC CGGTACAACA GCTTCGATA ACGTTGATT
601 CGTCGCACT TACGACACAG TCGAGTTCTT GAGCGCAGAT ACGAAAACAA
651 CCACTGTTAA TGTGAAAGC AAAGACAACG GCAAGAAAAAC CGAAGTTAAA
701 ATCGTGCGA AGACTTCTGT TATTAAAGAA AAAGAC...

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Number 107 ORF

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1 ..GGCACCGAAT TCAAAACCAC CCTTTCCGGA GCGACATAC AGGCAGGGGT
51 GGGTGA AAAA GCCCGAGCG ATGCGAAAT TATCCTAAAA GGCATCGTTA
101 ACCGCATCCA AACCGAAGAA AAGCTGGAAT CCAACTCGAC CGTATGGCAA
151 AAGCAGGCCG GAAGCGGCAG CACGGTTGAA ACGTGAAGC TACCGAGCTT
201 TGAAGGGCG GCACTGCCTA AGCTGACCGC TCCCGCGCGC TATATCGCCG
251 ACATCCCCAA AGGCAACCTC AAAACCGAAA TCGAAAAGCT GGCCAAACAG
301 CCCGAATATG CCTATCTGAA ACAGCTTCAG ACGGTCAAGG ACGTGAACGT

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351 GAACCAAGTA CAGCTCGCTT ACGACAAATG GGAATAATAA CAGGAAGGCC
 401 TAACCGGAGC CGGAGCCGCA ATTANCGCAC TGGCGGTTAC CGTGGTCACC
 451 TCAGGCGCAG GAACCGGAGC CGTATTGGGA TTAANACGNG TGGCCGCGC
 501 CGCAACCGAT GCAGCATT...

Number 108 ORF

1 ..CGGATCGTTG TAGGTTTGGC GATTTCCTGC GCCGTAGTCA CCGTAGTCC
 51 AAGTATAACC CAAGGCTTTG TCTTCGCCTT TCATTCCGAT AAGGGATATG
 101 ACGCTTTGGT CGGTATAGCC GTCTTGGGAA CCTTTGTCCA CCCAACGCAT
 151 ATCTGCCTGC GGATTCTCAT TGCCGCTTCT TGGCTGCTGA TTTTCTGCC
 201 TTCCGCTTTT TCAACTTCGC GCTTGAGGGC TTCGGCATAT TTGTCCGCCA
 251 ACGCCATTTC TTTCGATGC AGCTGCCTAT TGTTCCAATC TACATTCGCA
 301 CCCACCACAG CACCACCACT ACCACCAGTT GCATAG

Number 109 ORF

1 ..AAGTTTGACT TTACCTGGTT TATTCCGGCG GTAATCAAAT ACCGCCGGTT
 51 GTTTTTTGAA GTATTGGTGG TGTCGGTGGT GTTGCACTG TTTGCGCTGA
 101 TTACGCCTCT GTTTTTCCAA GTGGTGATGG ACAAGGTGCT GGTACATGG
 151 GGATTCTCTA CTTTGATGT GGTGTCGGTG GCTTTGTGG TGGTGTGGT
 201 GTTTGAGATT GTGTTGGGCG GTTTGCGGAC GTATCTGTT GCACATACGA
 251 CTTACGTAT TGATGTGAA TTGGGCGCGC GTTTGTTCOG GCATCTGCTT
 301 TCCCTGCCTT TATCCTATTT CGAGCACAGA CGAGTGGTG ATACGGTGGC
 351 TCGGGTGGCG GAATTGGAGC AGATTGCAA TTTCTGACC GGTGAGGCGC
 401 TGACTTCGGT GTTGGATTG GCGTTTTCGT TTATCTTCT GCGCGTGATG
 451 TGGTATTACA GCTCCACTCT GACTTGGGTG GTATTGGCTT CGTTG.....
 //
 1451
 1501
 1551 CAACCGGACG GTGCTGATTA TCGCCACCG TCTGTCCACT GTTAAACGG
 1601 CACACCGGAT CATTGCCATG GATAAAGGCA GGATTGTGA AGCGGGAACA
 1651 CAGCAGGAAT TGCTGGCGAA CG..AACGGA TATTACCGCT ATCTGTATGA
 1701 TTTACAGAAC GGGTAG

Number 110 ORF

1 ATGAAATACT TGATCCGCAC CGCCTTACTC GCAGTCGCAG CCGCCGGCAT
 51 CTACGCCTGC CAACCGCAAT CCGAAGCCGC AGTGCAAGTC AAGGCTGAAA
 101 ACAGCCTGAC CGCTATGCGC TTAGCCGTG CCGACAAACA GGCAGAGATT
 151 GACGGTTGA ACGCCCAAk sGACGCCGAA ATCAGA...

Number 111 ORF

1 ATGGTTATCG GAATATTACT CGCATCAAGC AAGCATGCTC TTGTCAATTAC
 51 TCTATTGTTA AATCCCGTCT TCCATGCATC CAGTTGCGTA TCGGTTsGG
 101 CAATACGGAA TAAAACTGCT TGTTCTGCTT TGGCTAAATT TGCCAAATTG
 151 TTTATTGTTT CTTTAGGAGC AGCTTGCTTA GCGCCTTCG CTTTCGACAA
 201 CGCCCCACA GCGCCTTCCC AAGCgTTGCC TACCGTTACC GCACCCGTGG
 251 CGATTCCCGC GCCCGCTTCG GCAGCCTGA

Number 112 ORF

1 ATGTTCACTA TTTTAAATGT GTTCTTCAT TGTATTCTGG CTTGTGTAGT
 51 CTCTGGTGAG ACGCCTACTA TATTTGGTAT CCTTGCTCTT TTTTACTTAT
 101 TGTATCTTTC TTATCTTGCT GTTTTAAAGA TTTTCTTTTC TTTTCTTA
 151 GACAGAGTTT CACTCCGGTC TCCAGGCTG GAGTGCAAT GGATGACCC
 201 TTTGGCTCAC TGGCTCACGG CCACTTCTGC TATTCTGCG CTTGAGCCTC
 251 CAGGG...

Number 113 ORF

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1  ..GTGCGGACGT GGTGGTTTT TTGGTTGCAG CGTTTGAAAT ACCCGTTGTT
51  GCTTTGGATT GCGGATATGT TGCTGTACCG GTTGTGGGC GGCGCGGAAA
101 TCGAATGCGG CCGTTGCCCT GTGCCGCGA TGACGGATTG GCAGCATTTT
151 TTGCCGCGGA TGGGAACGGT GTCGGCTTGG GTGGCGGTGA TTTGGGCATA
201 CCTGATGATT GAAAGTGAAA AAAACGGAAG ATATTGA

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Number 114 ORF

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1  ATGTTTCAAA ATTTTGATT GGGCGTGTTC CTGCTTGCCG TCCTCCCGGT
51  GCTGCCCTCC ATTACCGTCT CGCACGTGGC GCGCGGCTAT ACGCGCGGCT
101 ACTGGGGAGA CAACACTGCC GAACAATACG GCAGGCTGAC ACTGAACCCC
151 CTGCCCCATA TCGATTGGT CCGCACATC ATCgTACCGC TGCTTACTTT
201 GATGTTACAG CCCTTCCTGT TCGGCTGGGC GCGTCCGATT CCTATCGATT
251 CGCGCAACTT CGCAACCCG cGCTTGCCCT GCGGTTGCGT TGCCGCGTCC
301 GGCCCGCTGT CGAATCTAGC GATGGCTGTW CTGTGGGGCG TGGTTTTGTT
351 GCTGACTCOG TATGTCCGGC GGGCGTATCA GATGCGGTG GCTCAAATGG
401 CAAACTACGG TATTCTGATC AATGCGATTG TGTTCGCGCT CAACATCATC
451 CCCATCCTGC CTTGGGACGG CGGCATTTC ATCGACACCT TCCTGTGGGC
501 GAAATATTCC CAAGCGTTCC GCAAAATCGA ACCTTATGGG ACGTGGATTA
551 TCCTACTGCT GATGCTGACC sGGGTTTTGG GTGCGTTTAT WGCACCGATT
601 sTGCGGmTGc GTGATTGCTT TTGTGCAGAT GTWCGTCTGA CTGGCTTTCA
651 GACGGCATAA

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Number 115 ORF

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1  ATGAACCTGA TTTACGTTA CATCATCCGT CAAATGGCGG TTATGGGGT
51  TTACGCGCTC CTTGCCCTCC TCGCTTTGTA CAGCTTTTTT GAAATCCTGT
101 ACGAAACCGG CAACCTCGGC AAAGGCAGTT ACGGCATATG GGAATGCTG
151 GGCTACACCG CCCTCAAAAT GCCCGCCCGC GCCTACGAAC TGATTCCCTT
201 CGCGTCCTT ATCGGCGGAC TGGTCTCOCT CAGCCAGCTT GCCGCCGGCA
251 GCGAACTGAC CGTCATCAA GCCAGCGGCA TGAGCACCAA AAAGCTGCTG
301 TTGATTCTGT CGCAGTTCGG TTTTATTTTT GCTATTGCCA CCGTCGCGCT
351 CGGCGAATGG GTTGGGCCCA CACTGAGCCA AAAAGCCGAA AACATCAAG
401 CCGCGCCAT CAACGGCAA ATCAGCACCG GCAATACCGG CCTTTGGCTG
451 AAAGAAAAAA ACAGCGTGAT CAATGTGCGC GAAATGTTGC CCGACCAT..

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Number 116 ORF

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1  ..GCAGTAGCCG AAATGCCAA CAGCCAGGGC AAAGGTAAAC AGGCAGGCAG
51  TTCGGTTTCT GTTCACTGA AAACCTCAGG CGACCTTTGC GGCAAACTCA
101 AAACCACCCT TAAACTTTG GTCTGCTCTT TGGTTCCCT GAGTATGGTA
151 TTGCCTGCC ATGCCAAAT TACCACGAC AAATCAGCAC CTAAAAACCA
201 GCAGGTCGTT ATCCTTAAAA CCAACACTGG TGCCCCCTTG GTGAATATCC
251 AAATCCGAA TGGACGCGGA TTGAGCCACA ACCGCTA.TA CGCATTGAT
301 GTTGACAACA AAGGGGCAGT GTTAAACAAC GACCGTAACA ATAATCOGTT
351 TGTGGTCAAA GGCAGTGCGC AATTGATTTT GAACGAGGTA CGCGGTACGG
401 CTAGCAAACCT CAACGGCATC GTTACCGTAG GCGGTCAAAA GGCCGACGTG
451 ATTATGCCA ACCCAACGG CATTACOGTT AATGGCGGCG GCTTTAAAAA
501 TGTGCGTCGG GGCATCTTAA CTACCGGTGC GCCCCAATC GGCAAGACG
551 GTGCACTGAC AGGATTTGAT GTGGGTCAAG GCACATTGgA CCGTAGrAGC
601 AGCAGGTTGG AATGATAAAG GCGGAGCmrm yTACACCGGG GTACTTGCTC
651 GTGCAGTTGC TTTGAGGGG AAATTWmmGG GTAAA.AACT GCGGGTTTCT
701 ACCGGTCCTC AGAAAGTAGA TTAGCCAGC GGCGAAATCA GTGCAGGTAC
751 GGCAGCGGGT ACGAAACCGA CTATTGCCCT TGATACTGCC GCACTGGGCG
801 GTATGTACGC CGACAGCATC AACTGATTG CCAATGAAAA AGCGGTAGGC
851 GTCTAA

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Number 117 ORF

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1  ..CGCTTCATTC ATGATGAAGC AGTCGGCAGC AACATCGGCG GCGGCAAAAT
51  GATTGTTGCA GCCGGGCAGG ATATCAATGT ACGCGGCANA AGCCTTATT
101 CTGATAAGGG CATTGTTTTA AAAGCAGGAC ACGACATCGA TATTCTACT
151 GCCCATAATC GCTATACCGG CAATGAATAC CACGAGAGCA WAAAATCAGG
201 CGTCATGGGT ACTGGCGGAT TGGGCTTTAC TATCGGTAAC CGGAAAACATA
251 CCGATGACAC TGATCGTACC AATATTGTsC ATACAGGCAG CATTATAGGC
301 AGCCTGAATG GAGACACCGT TACAGTTGCA GGAAACCGCT ACCGACAAAC
351 CGGCAGTACC GTCTCCAGCC COGAGGGGCG CAATACCGTC ACAGCCAAAW
401 GCATAGATGT AGAGTTCGCA AACAACCGGT ATGCCACTGA CTACGCCCAT
451 ACCCAgGGAA CAAAAAGGCC TTACCGTGGC CCTCAATGTC COGGTTGTCC
501 AAGCTGCACA AAACCTTCATA CAAGCAGCCC AAAATGTGGG CAAAAGTAAA
551 AATAAACGCG TTAATGCCAT GGCTGCAGCC AATGCTGCAT GGCAGAGTTA
601 TCAAGCAACC CAACAAATGC AACAAATTGC TCCAAGCAGC AGTGGGGGAC
651 AAGGTCAAAA CTACAATCAA AGCCCCAGTA TCAGTGTGTC CATTAC . TAC
701 GGCGAACAGA AAAGTCGTAA CGAGCAAAA AGACATTACA CCGAAgCGGC
751 AgCAAGTCAA ATTATCGGCA AAGGGCAAA CACACTTGGC GCAACAGGAA
801 GTGGGGAGCA GTCCAATATC AATATTACAG GTTCCGATGT CATCGGCCAT
851 GCAGGTACTC C . CTCATTGC CGACAACCA ATCAGACTCC AATCTGCCAA
901 ACAGGACGGC AGCGAGCAA GCAAAAACAA AAGCAGTGGT TGGAAATCGAG
951 GCGTACGTnn CAAAATAGGC AACGGCATCA GGTTTGGAAT TACCGCCGGA
1001 GGAAATATCG GTAAAGGTAA AGAGCAAGGG GGAAGTACTA CCCACCGCCA
1051 CACCCATGTC GGCAGCACAA COGGCAAAAC TACCATCCGA AGCGCGGGG
1101 GATACCACCC TCAAAGGTGT GCAGCTCATC GGCAAAGGCA TACAGGCAGA
1151 TACGCGCAAC CTGCATATAG AAAGTGTTCA AGATACTGAA ACCTATCAGA
1201 GCAAACAGCA AAACGGCAAT GTCCAAGTT ACTGTGGTT ACGGATTCAG
1251 TGCAAGCGGC AGTTACCGCC AAAGCAAAGT CAAAGCAGAC CATGCTCCG
1301 TAACCGGGCA AAgCGGTATT TATGCCGGAG AAGACGGGTA TCAAAATyAAA
1351 GTyAGAGACA ACACAGACCT yAAGGGCGGT ATCATCACGT CTAGCCAAAG
1401 CGCAGAAGAT AAGGGCAAAA ACCTTTTTC GACGGCCACC CTTACTGCCA
1451 GCGACATTCA AAACCACAGC CGCTACGAAG GCAGAAGCTT CGGCATAGGC
1501 GGCAGTTTCG ACCTGAACGG CGGCTGGGAC GGCACGGTTA CCGACAAACA
1551 AGGCAGGCCT ACCGACAGGA TAAGCCCGGC AGCCGGCTAC GGCAGCGAGC
1601 GAGACAGCAA AAACAGCAC ACCCGCAGCG GCGTCAACAC CCACACATA
1651 CACATCACCG ACGAAGCGGG ACAACTTGCC CGAACAGGCA GGACTGCAAA
1701 AGAAACCGAA GCGCGTATCT ACACGGCAT CGACACCGAA ACTGGCGATC
1751 AACACTCAGG CCATCTGAAA AACAGCTTCG AC...

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Number 118 ORF

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1  ..ACGACCGGCA GCCTCGGCGG CATACTGGCC GCGGCGGCA CTTCCCTTGC
51  CGCACCCTAT TTGGACAAAG CGGCGGAAA CCTCGGTCCG GCGGGCAAAG
101 CGGCGGTCAA CGCACTGGGC GGTGCGGCA TCGCTATGC AACTGGTGGT
151 AGTGGTGGTG CTGTGGTGGG TGCGAATGTA GATTGGAACA ATAGGCAGCT
201 GCATCCGAAA GAAATGGCGT TGGCGACAA ATATGCCGAA GOCCTCAAGC
251 GCGAAGTTGA AAAACGCGAA GGCAGAAAA TCAGCAGCCA AGAAGCGGCA
301 ATGAGAAATCC GCAGGCAGAT ATGCGTTGGG TGGACAAAGG TTCCAAGAC
351 GGCTATACCG ACCAAGCGT CATATCCCTT ATCGGAATGA

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Number 119 ORF

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1  ..CAATGCCGTC TGAAAAGCTC ACAATTTTAC AGACGGCATT TGTATGCAA
51  GTACATATAC AGATTCCCTA TATACTGCCC AGrKGCGTGC GTgGCTGAAG
101 ACACCCCTTA CGCTTGCTAT TTGrAACAGC TCCAAGTCAC CAAAGAGCTC
151 AACTGGAACC AGGTACwACT GCGGTACGAC AAATGGGACT ATAAACAGGA
201 AGGCTTAACC GGAGCCGAG CAGCGATTAT TCGCTGGCT GTTACCGTGG
251 TTA CTGCGGG CGCGGGAgCC GGAGCCGCAC TGGGcTTAAA CGGCGCGGCc
301 GCAGCGCAA CCGATGCCGC ATTGCGCTCG CTGGCCAGCC AGGcTTCCGT
351 ATCGCTCATC AaCAACAAG GCAATATCGG TAaCACCCTG AAAGAGCTGG
401 GCAGAAGCAG CAGGTGAAA AATCTGATGG TTGCCGTGCG tACCGCAgGC
451 GTagCcgCaCA AAATCGGTGC TTCGGCACTG AACAAATGTCA GCGATAAGCA
501 GTGGATCAAC AACCTGACCG TCAACCTGGC CAATGCGGGC AGTGCCGCAC

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551 TGATTAATAC CGCTGTCAAC GCGGCGAGCc tgAAAGACAA TCTGGAAGCG
 601 AATATCCTTG CGGCTTTGGT GAATACTGCG CATGGAGAAG CAGCCAGTAA
 651 AATCAAACAG TTGGATCAGC ACTACATTAC CCACAAGATT GCCCaTGCCA
 701 TAGCGGGCTG TCGGGcTGCG GCGGCGAATA AGGGCAAGTG TCAGGATGGT
 751 GCGATAgGTG CGGCTGTGGG CGAGATAGTC GGGGAgGCTT TGACAAACGG
 801 CAAAAATCCT GACACTTTGA CAGCTAAAgA ACGGCaACAG ATTTTGGCAT
 851 ACAGCAAACt GGTTCGCGGT ACGGTAAGCG GTGTGGTGG CGGCGATGTA
 901 AATGCGGCGG CGAATGCGGC TGAGGTAGCG GTGAAAATA ATCAGCTTAG
 951 CGACAAAtGA

Number 120 ORF

1 ATGGCAATCA TTACATTGTA TTATTCTGTC AATGGTATTT TAAATGTATG
 51 TGCAAAAGCA AAAAATATTC AAGTAGTTGC CAATAATAAG AATATGGTTC
 101 TTTTGGGTT TTTGGsmrGC ATCATCGGCG GTTCAACCAA TGCCATGCT
 151 CCCATATTGT TAATATTTTT GCTTAGCGAA ACAGAAAATA AAAATcgTAT
 201 CGTAAATCA AGCAATCTAT GCTATCTTTT GCGGAAAATT GTTCAAATAT
 251 ATATGCTAAG AGACCAGTAT TGGTTATTAA ATAAGAGTGA ATACGdTTTA
 301 ATATTTTAC TGTCCGTATT GTCTGTTATT GGATTGTATG TTGGAATTG
 351 GTTAAGGACT AAGATTAGCC CAaATTTTT TAAAATGTTA ATTTTATTG
 401 tTTTATTGGT ATTGGCtCTG AAAATCGGGC AttCGGGTTT AAtCAAACtT
 451 TAA

Number 121 ORF

1 ATGTTACGtT TGACTGctTT AGCGGTATGC ACCGCCCTCG CTTTGGGCGC
 51 GTGTTGCGCG CAAAATTCOG ACTCTGCCCG ACAAGCCAAA GaACAGGCGG
 101 TTTCCGCGC ACAAAACGAA GgCGCGTCCG TTACCGTCAA AACCGCGCGC
 151 GCGGACGTC AAATACGCA AAACCCGAA CGCATCGCGG TTTACGATTT
 201 GGGTATGCTC GACACCTTGA GCAAACCTGGG CGTGAAAACC GGTTTGTCCG
 251 TCGATAAAAA CGCCTGCCG TATTTAGAGG AATATTTCAA AACGACAAA
 301 CCTGCCGGCA CTTTGTTCGA GCCGGATTAC GAAACGCTCA ACGCTTACAA
 351 ACCGCAGCTC ATCATCATG GCAGCCGCGC CgCCAAGGCG TTTGACAAAT
 401 TGAACGAAAT CGCGCCGACC ATCGmmWTGA CCGCCGATAC CGCCACCTC
 451 AAAGAAAGTG CCAAtGAGGC ATCGACGCTG GCGCAAATCT TC..

Number 122 ORF

1 ATGAGACATA TGAAAATACA AAATTATTTA CTAGTATTTA TAGTTTTACA
 51 TATAGCCTTG ATAGTAATTA ATATAGTGTt TGGTTATTTT GTTTTTCTAT
 101 TTGATTTTTT TGCGTTTTTG TTTTTGCAA ACGTCTTCT TGCTGTAAAT
 151 TTATTATTTT TAGAAAAAA CATAAAAAAC AAATTATTGT TTTTATGCCC
 201 GATTTCTATT ATTATATGGA TGGTAATTCA TATTAGTATG ATAAATATAA
 251 AATTTTATAA ATTTGAGCAT CAAATAAAGG AACAAATAT ATCCTCGATT
 301 ACTGGGGTGA TAAAACCACA TGATAGTTAT AATTATGTTT ATGACTCAAA
 351 TGGATATGCT AAATTAAAAG ATAATCATAG ATATGGTAGG GTAATTAGAG
 401 AAACACCTTA TATTGATGTA GTTGCACTG ATGTTAAAAA TAAATCCATA
 451 AGATTAGCT TGGTTGTGG TATTCATTCA TATGCTCCAT GTGCCAATTT
 501 TATAAAATTT GTCAGG..

Number 123 ORF

1 ..ACCCCAACA GCGTGACGT CTTGCCGTCT TTCGGCGGAT TCGGGCGTAC
 51 CGGCGCGACC ATCAATGCAG CAGGCGGGT CGGCATGACT GCCTTTTCGA
 101 CAACCTTAAT TTCCGTAGCC GAGGCGGCGG TTGTAGAGCT GCAGGCGGTG
 151 AGAGCAAAG CCGTCAATGC AACC GCCGCT TGCATTTTA CGGTCTTGAG
 201 TAAGGACATT TCGATTTC TTTTATTTT CCGTTTTTCAG ACGGCTGACT
 251 TCGCCTGTA TTTTCGCCAA AGCCATGCCG ACAGCGTGCG CCTTGACTTC
 301 ATATTAAAA GCTTCGCGC GTGCCAGTTC CAGTTCGCGC GCATAGTTTT
 351 GAGCCGACAA CAGCAGGGCT TGCGCCTGT CCGCTCCAT CTGTGCGATG
 401 ACCGCTGCA GCTTCGCAA TGCCGACTTG TAGCCTTGAT GGTGCGACAC

451 AGCCAAGCCC GTGCCGACAA GCGCGATAAT GGCAATCGGT TGCCAGTAAT
501 TCGCCAGCAG TTCACGAGA TTCATTCTCG ACCTCCTGAC GCTTCAAGCT
551 GA

APPENDIX C

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 1>:

gnm_1

5 GAAAATTACGACGACGAGGAAGATTGCCAGCATTTCGCGGGCGGTTTTAAACTTACCGA
CGGTGGCGACGGCAACGCTGTTCCTTTTGCCTATTTCGCCATCCATTTCGCGCAATGCGG
AAATGGTAATTTCCCTGCCGATGATGATCATGGCAAACAAAACATAGGTCCGGTCGAGTT
TGACCAGTAAAAGCAAAGAGACGGCGACCATCAGCTTGTTCGGCAACGGGATCGAGGAAGG
10 CGCCGAAATCCGAGGTCTGTTTCCACAACCTTGCCAAAAATCCGTCAAACCAAGTCGGTCA
AGGCGGCAACGGCAAAAATGACGGCGGGCGGTGAGATTAAATCGTTTCTCCGGAACCCAG
GAAAAGGCAGGTAAAAAAGGGCTGTCAGGACAGGAATGAGCAAGACCCCTCAACCATGTGA
GGAAGATGGGGAGATTCCAAGGCATCGGTTTTCTCTGTGCAGACTGTAAAGTTGTGATTA
TAACGGTTATCTCATAACCCAAAACGTAAAATTGCTGCATGGGCATTCCCCCGCCCCGC
CAATCTGTTTTACATTCTTTTCAAACGCAGGAAAATGGCGGGCAATAAAAGCAAATAC
15 CCAGTTTCAGGCTGAAAACGGCAGGTTGTGCCAACACTTCGACAAGGCGGTCTTCGGTGC
GGGCAAAATCTTTATTGCTTATAGACACTGCCACTGTTGCGGTATTCCAACAGAACGCCG
TTTAAAAAACCTTTGCCGACGGTTTCGCTTAAACGGCTCTAACCTGCTCCGCCCTGATG
GTTCTGCCGATATTGCCGCTGTGCACAACTGTCAACCCATAGCAGGAAAGCCGGTAA
TGCTGCCCGTCTGCATCCAGTTTGATTGCCCGTCCGCTCGGTTGAGGGCGGTAAACGGTC
20 AATTCGCATATTGCAATGTTTTCTTGTTCGTGAAATGCCGTCAAGTAAGGTGCAATA
AAAACGGCGGACAACAGCAGACAGCTTATGGCGGCAACCATACCCAGCGATAATATAGT
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 2>:

50 **gnm_2**

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15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 3>:

gnm_3

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 4>:

gnm_4

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- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 5>:

gnm_5

CAGACATTACCGTGTAACAGGCCAACACAAACGAAGCAGCACAAGCCGTTGCAGATGCC
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40 GGCAAAGAAGCGGCATTCTGACCGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 6>:

gnm_6

45 GTTATGATATGTTTCGATATGTAAACATTTATAGGTTTGGAGCGATAAACAATGAATGCA
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 20 CAAATCGAAATTGTTGCACCTTAAAAACGAATGGCAGACTGAAAATATCCATCGGGCA
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 7>:

25 **gnm_7**
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 8>:

gnm_8

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25 ATTCGGCAGGTTCCGGCATCCTTCCCATACCATTTTCTCCGCAAGCCTGTTCCGCCAAGC
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 9>:

20 **gnm_9**

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C C A G C A G C C A T T C G A T T G C C G G T T T G C C C T G C G A C A G G A T G G C G C G G A C G G C G G C T T C A T
C A C A C A A A C C C G C G C C C G C T T C C A A G T A T C G G C A A C G T G T T T T C G A T G T C G T C C T C T C
C C G A C C A C G C C G C C G C A A T C C C G C C T T G C G C A T G A C G G C T G G C G G T G T C G T C C A G C C G G T
10 T T T T G C A C A A A T A A C G A T G C G G A A C G A T T C A G G C A G C G A C A G G G C G A G C G T C A G T G C C G
C C A G C C C G T T T C C G G C A A T C A A T A C G T C G C A A T C G G T T T G C A T G G T G T T G T C C T T G T T T G
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T G A G A A G C A C C A C G C C C A G A A A A T C A A C C G A T G C T G A C A A T C C C A A T G A A A T C A G C T T
15 T C T C A C C G A A A A A C A C C A C G C T G A C T A A A G C C G T T A A A C C A G T C C C A C G C C T G C C C A A A
T G G C G T A T G C T G T A G C C A G C G G C A T G G T T T T C A G T G T C A T A G A C A A G G C C C A A A A C A C A
C C G A A A A G C T G A C T A C C A C G C C A A T A G A A G G C C A C A G T T T G C T A A A C C C G C C A C T C A G T T
T G A G C A T G G A A A C C G C A G A C T T C G C T T A A A A T T G C T A C A G T C A G A A A G A G C C A G T G C A
T T T G C A T G T T T T A C C T G A T A A A T G A A G A A A G T A T A A T T A T A T C A A T G C A A T A A A A T A A
A A A A C A G T C T T G T T G T T A A A G A T T T T T G T G T G C A A A T C C C G T C T T G G G A A A G C A G G C G
20 G G C G G T A T T T T C A C C C A T T A C G A A C G A C A A A T C A G G C G G G G C C A T G C C G T T G
A A C A C A T C T T T T T T C T C A G C C C T G C C G C A A A G T C A G A C A T A C G C T G C A A A G G C A G T T T G
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T T G A T G C C G C C C A G C A A T T C A T C G C C A T C C A C G G C A G A A C G C G C A G C T T T T A C A G C T T
C C A C C G T T G C C C G C C G T C G G C G C G G C G A T A A A T G T T T G T C G G G C G C C T G C T T T T G C A T T
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C G C G C T T T C A C G G C G G C G G A A G T G T T G G C G T A C C A C C A C C G T G C G G T C G G G G T G T T G G
T C G C A A A C G C T G A A A C G C T T C T T C C G G G C A A C C C A A T C C A A G A A C A T T C C G C C T C C
A A A T C A G G C A T C A G A C C G T T T T T C A G G C A G A G G A T T T T C G C G C T C T C G C C C A T G A A G
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G C G G T T T G C A T G A T G T T T C C T T G T A G C T G T T T T C A G A C G G C A T G A A G G T T T G C C G T C T G
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A C A G G T T T G C A A T A C C G T A A A A C C G A C C C G C T T C G T T C C G A C A A A C C G C T T T G G T T A C A
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45 A T T C C T T G C A G G C A G G C G T A A A A C T G T G G G T C G C C A A G C A G A C T T C G C A G C C T A T G G G C T
A T G T G G A A C A G C T T T A C A C C T T T G T C G A T A C C C A C C G C C G C A A C G A A C A C G G C A T G C C C G
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A T G C G A A A T G G C A G A C T G C T A C G G C T A T T T C C C G T G G G A A G A C T T G C G C A C C G A C G G C G
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G G T C G G A A G A A T A C G T T T T G C A A C G C T A T G A A A T C T G T A T G A A A G C G G C C T G A T A G C G G
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C C G T G A T T T T G A A C T G A T G C C G C C C G A A T T C A C G C T G C T G C A A C T G C A A A A C A G C G T C G
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A C C T A T C G A G C C G T C G G A T A C C G G C G T A T C G G G C A G C A A A G C C G T C C C G C G C A G C T T T
G C C G C T T C C G C G A C G A C G T C C T G C C C G A C A G G C T G A T T T C G G A C A T C G G A C T G C C G C T G G
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A C G A A G C C G C A G A C A G T A C A A A T A G T A C G G A A C C G A T T C A C T T G G T G C T T G A G C A C C T T A
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T T T T G C C C C A T C G G T G C A A C A T C A A T C T T T T T C A A C A A A G G A A A C C C C A T G C C G T C T G A A
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5 ATGGCTACCGTGGCAGCGACACGTTTTGAACCGCTTATTCGGGATTTCCACCAACGCCCC
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ATATCGAATGCCCGGATGCGTGATTATTTGCCGAAAACGATACCGCCGAAAACGGTATC
TAAACGGCTTGATTGAGTTTTGGTATTTTTGCCCGACGGGTGAAAAATACAGTTGCTA
CGGCTCGATGAATCGTCAGAAATACCTGCATCGTCATTCCCGCGCAGGTGGGAATCCAGA
10 CCGGTGCGTGCGGAAACTTATCAGGTAAAACGGTTTCTTGAGATTTTTCGTCTTGATT
CCACTTTCGTGTGAATGACGGAATGTAGGTTTCGTGGGAATGACGTGGTGCAGGTTCCGT
ATGGATGGATTTCGTATTCCCGCGCAGGCGGGAATCTAGTCTGTTCCGTTTCAGTTATTT
TCGATAAATGCCTGTTGCTTTTCATTTCTAGATTCCCACTTTCGTGGGAATGACGGGATT
TTAGGTTTCTGATTTTGGTTTCTGTCTTGTGGGAATGACGGGATGTAGGTTTCGTAGGA
15 ATGACGTGGTGCAGGTTCCGTGCGGATGGATTTCGTATTCTCGCGAGGCGGGAATCCA
GTCTGTTCCGTTTCAGTTATTTCCGATAAATGCCTGTTGCTTTTCATTTCTAGATTCCCA
CTTTCGTGGGAATGACGGTTTCAGTTGCTACGGTTACTGTACGGTTTCGGTTATGTTGGAA
TTTCGGGAAACTTATGAATCGTCATTCCCGCGCAGGCGGCAATCTGGAATTTCAATGCCT
CAAGAATTTATCGGAAAAATAAAACCTTCCGCCGTCATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 10>:

gnm_10

GTCGGTTCGGTTTTGATGCAGCGTATGAAAGAAGAAAACGACTTCGCCACATTCTTGAA
GCGTTTTTCTTTACCATTCCAACGTCGGCGCGCAGCCCTGATTTCCGTCAGGCGGCT
25 AAAACATTATTAGATGCCAACAATGTTGCCGAACCTCGCCAAAATGGACATCATCGTTACC
TGCCAAGGCGGCGATTACACCAAATCCGTCTTCCAAGCCCTGCGCGACAGCGGCTGGAAC
GGCTACTGGATTGACGCGGCGTCTCACTGCGCATGAAAGACGACGCGATTATCGTCCTC
GACCCTGTCAACCGCGATGCTCTGCAACCGGTCTCAAAAACGGCGTGAAAACTACATT
GGCGGCAACTGCACCGTTTCCCTGATGCTGATGGCTTTGGGCGGCGCTGTTCCAAAACGAT
30 TTGGTCGAATGGGCAACCAGCATGACCTACCAAGCCGCTTCGGCGCGGGCGCGAAAAAC
ATGCGCGAACTCATCAGCGGTATGGGCGCGGTTACGCCCCAAGTGGCGGACGCGCTTGCC
GATCCTGCCGGCTCGATTCTCGACATCGACCGCAAAGTATCCGATTTCTGCGCAGCGAA
GACTATCCGAAAGCCAACCTCGGCGTACCGCTCGCCGGCAGCCTGATTCCGTGGATTGAC
GTGGATTGGGCAACGGCCAGTCCAAAGAAGAAATGGAAGGCGGCGTGGAACCACAA
35 ATCCTCGGCCGAGCGACATCCAACCGTGATTGACGGCCTGTGCGTCCGCGTCGGCGCG
ATGCGCTGCCACAGCCAAGCCATCACTCTGAAGTTGAAAAAGACCTGCCTGTTTCCGAA
ATCGAAACGATTTTGGCAGGCGGAATGACTGGGTGAAAGTCATCCCCAATGAAAAAGAA
GCCAGCATCCACGAGCTGACTCCTGCCAAAGTTACCGGCACGCTGTCCGTCCCTGTCGGA
CGCATCCGCAAACTGGGCATGGGCGGCGAATACATCAGCGCGTTACCGTCGGCGACCAA
40 CTTTTGTGGGGCGCTGCCGAACCGCTGCGCGCGTATTGCGTATCGTGTTGGGCGCCTG
TGAGCCCTGTTTGAATGGAAATGCCGTCTGAAGCCTGTTTCAGACGGCATTTCCTTGCA
ACCCTGCGGGATAACGCCCTGCCGGCACTGCCGACGTAAAAAATAAAGGATTCCATTTC
GGCGGTATGCGGCAGCCCGACTTTATCCGAACCTGATGCGCCTGCACGTCAATGAAAAA
GCCGATTGCGGACTTCTGCTACAGCCGAAATTCGATAAGGCAAGCGTTACGCGCAGC
45 AACATTTCTGTCATCAGCTTATACCCCACTGCCAGCCGCGAGCATGCCGTTCAAACG
CCGAAATGCGGGGAAACCAACAGGCGGGCGTTCCACAAATCCGCTGTTTTTGGCCCCAA
CCGTGCGGCACGCCCGCGTGTTCGGGTACAACCAATGCGGCACGGCAGGGACAGCGGACG
CGTTGGAAGCGTGTTCCGCATCGTCGGGAAAAATATCGGGACGCTGCGGTACAAGGATG
ATGTTGGCAATTTTCTTCCGTGTGAGGATGTGCTGCTGATACAGCCACGCCAAAAATGCG
50 GCCGCGCCGACCGTGTGCGACAACGGCGACGTATTGCGCGGTATGCGTTCAAATGCC
GTCTGAAGCCCTGCCTGCCATTCCCTATGCTTTGACCGGCCGACGCTTCGGACATCTGC
ACGACGGGATAACTGATCGCCCAACGGTCTATCCACATCTGATCTCTCCGGCATCGCGT
ATCAGCCAAAGCGTCAAATCTTCGAGTTCAAAACCTGCATACCGCCCCGCTATTTTCAG

5 CAGGTCCCGGAGGGTAAAGGCGATGAGCAGCGAAGCGGGTACGCTCAATATGGCGCAGAC
GGTCAGGCAGGCAGGCAAAATATTCACCAACCGCCGAGCCTTTCCAACCCAAACATTTGGA
CGCAATCAGCAGGCAGGGCAGGCAATCAGCAGCCACACCAACGCCCATATCGGGTTTGC
CTTGGTCGGCGCAAGCCAGCCTTGCATCCGCGACAACATAAATATCGCCACACCAACAT
10 GGGCAGGATAAACGCAGCGACGACCCATGCCGCGCCTATTCTGTTTTTCCGTCCACATT
CCAATCATATTTACCCAAACCTTATTCGGCAGCATAGTCATACTCCACGACAGCGGCG
CATGGTCAGAAAATTTTTCATCTTTATAAACGTGTGCGGACACGGCTTTGGCAGCAAGTT
CGGGCGTAACCATCTGATAATCGATGCGCCACCCGACATCTTTCGCATACGCCTGCCCTC
15 GATTGCTCCACCAAGTGTAGCTTGGCGGTTGGCATTGCCGGAAGAAAGCAGGCTGCTGTT
GAAATCTTCCGTCCAGTCCCAAATCAGCCCGTGCATATCATAAAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 11>:

gnm_11

15 GGAATTTTCGTGTCAAGCTTTTCGTGTGTGAAAATTTTTCAGTGGAACGTGGACGGGCGG
TTTGACGATGACATACCACTGTTTCGGAATATCCATTTCGTCCAGCCTGTCGCCTATACC
CCGCGCAAACGCATTTTTCGCGAAAATAAAAAACGGTACGTCCGCCCCCAGAGCCGCGCC
CGAATCAATGAGCTGCCGCTGCGTCAGACCGCACTGCCACCAACGGTTCAACACCAGCAA
AACGGTTGCCGCATCCGAGCTTCCGCCGCCCAAACCCGCCCTGTCGGGATTTTTCGTC
20 CAGCCATATTTCCACGCCGGCGGGGTTGCGCGCATATTTTTCAGCAACGATGCGGCACG
GTAGCTCAAATCTACTTCTGCGGCATGCCATCAACCGGATTGTGCAGGATGATTTTGCC
GTCGTCCTCGGTTTCAAATATACGGTATCCTGCAAATCTATCAGGCAGAATATGCTTTC
GATATTGTGATAACCGTCTTCCCGCTGCCGGTAATCCTCAAATCGAGATTTCAGTTTTCG
AGGTGCGGAAAACGCCCTGCCGTCCGTCCGCAATATTCATCTGTCCGCCCTTATCTCGTGCG
25 CGCCGCACAGCGTTCCGGGGTTTCGGTTTCAGACGGCATACCGATTTCGGTGAAACAG
CCTGATGTTCAAATTTCCGTATTTCAGTTGCAACGTTCCGACTTGCCCCCACTGTCGGC
GGTTCTGCCGACAGTCCAACCGTATTGTTCCAATATGCCGTCCGGCAGGATGCCGTAAGG
CGCGCCCCCAGACGCTGCCATCTGCCAGATATGCAGATATTGGATTGGCAGTTTGAA
ACCGACAGCTGCCTGCTCAATTCTTCCGCACTTTCGGCCTGATAGACATTTTCCTTTGCC
30 GTCCACTGCCAATGCGCCGTCCCTGTCTTGACACAACCTGCCGAGCGTACTGCCCAAAGG
GGTATTGATATTGATGGTTTCCACGGGCGGTTGGTATGTCCAATCGAAATTTGCATACGA
ACCTTTCCCTTCCGCTTTCACTGCCAACC GCCCTTCTGCTGCAAACTGCTGATGTGTT
GGACGGCTGCCACAGGTTTTTCGTTATTTTGAGGTAATTGCGCGCAAGCGGTCAAAGCAG
GATGACCGATGCGGATACGGTGTGTTTCATCAGAATTTCTTAAACGGATGCCATCCTGCC
GGCCGATGGGTTTCGGCGTGCCGTGCAAAACGCGTGCGAAGTGGTGCCGTTTGCCGAAT
35 GCCCCGGCTTCCCGGCAAACCTTATGCCGTCTGAAAGGATGGACCTGCATTATTTCCGAG
GTTTTCCGGGAAGGTTGGGGCAATGCGATGCCGTGACGTTTGAGCGTTTCCCGCATATTT
TCTTGCTCTCCCGTAAGGTGTGCCGCTGCGTCCATACGTCAACCGCTGATCGCGTTTCGC
CCAATGCCCAACACTTCGCCCAAATGGGCGGCAACTTCGGGCTCGGGGTCGTTTTCAA
ACGAATACCGCAGATACGGCAGCGGCTTTCGCGCTCGCCTTTTCAGGTAATACGCCCAGC
40 CTATGCTGTCGTTGACAGCGGTATCGTCCGGGTTGATTTGGTATGCCGTCTGAAGCAGGG
CGAAACCTTCGTCCAAACGTTTGAATCGGTACGAGGCTGTAGCCAGATTATTCATAA
TCTGAGCGTTATCGGGTGCAAGCCTGAACGCCCTTTCAGATCTGAAATCATTTTTTTCC
GCTTGCCAAGCCGATCGTAACAACTGACCGCTGTACCAATGCCTCTGCCTGTAACCTG
45 TATTACTCCCGGAGGCGGTTTTTCGATAATCTTGTCCAACCCCTCAAAGCCTCCCGTT
TATCGGGCAGCTTCGACAGGGCGAGCATCTGTATTTTGACAAATTGTCTGCCGTAAAT
ACCGCCCTGCTGTTTCGGGAAGTTTCGCGACCCGTGCCGATCTGCCGCAAGCCGCCCTGC
CGCCGTCCAATCGACAGCCGCCGAGCCGCCAGCACACCTTTGTGCAACAGGTATTCCG
GCGCGGATATTTTTTCAGCCACTGCCTGACTTTGGCGTAATCCCTGCCGTGCGCATACA
TCATCGCCGCCGTTAGCGCCGCCCTGCTCCGCTGTTCTCCGTCCCCCTGCCGTATGCCCT
50 TTTCCGCGTAGCCGTCGATAACGGAAGCACCTTCTTTTCGGTTTGCCGCAATATCGCTG
CCTGAATATACAGGTCTGCATTTCGATTGCGTTCCAACAGCACGTTCAAACGCGCATAGG
CATCATCAGCCTGTGCAGGGAACAGATTATTAATTTCCATTTCTGCCAGACGGCCG
AAAGGTTTTGGGTGCTGTCTGCTCGAAAAGCCGTGAGTATTTCCGGATATTTGCGTG

CAGTCAGACGCAACGTCATTAAAGTGGGGGGCAATATTTCCGTATCGAGCTTCGCCAAAC
GCTGCAAAGCTCCGATTGCCTTTTCTTTTCGCGTCCCTGTACGCTGAACACCACATCGG
CAACCGCGCTTCGGGCAGATGTTCAATTTCAACGCCGCGCGGCGAACCGCTTTCGATG
5 CTTTTTGCGCCAACCCGTCCTGTTGCACGGCGGCTTGTGCCAACAAATAAAACACCCTGC
GGTTCGTCTTCGTCCGCTGAGCCAGCACTTCTCCAGTCCGTCCAGATGCTGATTTC
CTCTTTCCTCAGCAGGTTCCGCGAGCCACCCGCGCTTTTGGCGCTTACCCGGTATAG
GCTCAATCTGCCGCCATTCTGATAAATCATTTCGCGCTGTTCAAACGCGTTCAGCGACA
CGGCCATTTCGAAGGCGGCTTCGGCGACTTCGGGGGATTTGTGCGTTCACACATCAGCA
10 TATAGGTTGCCAGAGCGGTTCCCGCTGCCCTTTTGAAGGCGGTTTCCCTCCCAGCA
ACGTAAATATCTGATTAACCCGCTCGCCACTGCCGCAAGCCGTGCGCGTTCGTTTTTGA
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15 TTGCGAAACCCCGTTCAAAAAATAATGCCGTCTGAAACGCAATCCGCTTCAGACGGCA
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20 GCCTTTAATTCGCGGTACAGGCGCGGTGCTTCGTGCGGTTCCGCGCGACTCAAATACTGG
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25 TCGAGGTTGTAACGCTGTTCCACGTTCCGATAGAGTTCTTCTCATCGGGCGGAAAACA
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TCGAAATCCTCGCCGTGACCGAATTGCAGGCGATTGACGAAAATGCTGACCACGACACTG
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30 TGTATGATTGCATAACGGTAATCCTTATCCTTCGGGCTTCTGCCCGACAAAACGCGCC
GATTATACGCGCCGCGCACGGCAAAACAAAATGCCGTCTGAAACGGCTTTCAGACGGCAT
GCTGCATGTAAACCGTCAATCTGCAAAAATATGTTCCGCGAGCAGGGAAGGTTTGGCTT
TGACTTCGGCAACATACGCCCCGAACCGCCGCTTGAACACTATCATGCCCTGCATAAAGT
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35 CCTGCCGTCGCAATCCGCAACCCGCGCCGATGGTCCGACAGGAACAGTTTCAG
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40 CCATATGCGCGCCGCGAGCCATCAGTTCGGCGGCGGCGGCAACGCCTGCTCCTTACTCT
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CGCAATGCAAAACAGCCGACTGTTTACACAATCGGACTGTCAAATCTGGTGCCGGCA
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50 AACTCGGGACCCCTGATTACAAGTCAGGTGCTTACCAACTGAGCTATACCGGCAAGA
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55 CCGTTCCGTTCACTTGGGCGAGCAGACCCGTTCAAAGCTCGATGAACCTCGACCACCGCTC
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CTACCTGCCCCGACACGCGCCAAACCGCGTGGACATCAATCCGACGGTCATCGCCATTGC
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TGCAGAAATATATCAAAGTCTTCCGCCACAACACCGATGTGATTTTGGTGGACGGGTTCGA
CGGCGAACAATCATCGATGCGCTGGTTGAAGAACCGTTCTTCCGAGACTGCCGCAACGC
5 ACTCTCTTCAGACGGCATATTTCGTAACCAACTGGTGGAGCGCGACAAACGCTACCAACG
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10 TTCCACGGCTGCATCGGAACATGCGGAAAATCAAGAGGAAATCATTATGCTGAAACCGGA
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15 AACGCAAGACTGCCTCGCCGTCAATGATTATGCCCGCGCCCAACACCCCGAAGCCCCGA
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20 CGCCGGTTCACGCATTTCTTTCACGGCAAACCTCATCGTCTGCGCGACACCATCTCCG
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30 ATTTGTCGACAGCAGCATCACGCTGCCGTATCCTTGTCCAAGCGGTGCAGCGCGTAAT
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35 CGCACCATCCGAACCGACCAAAACCGCTGTTCAACCGCCTGCGCCAATCGTCCGCGCC
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40 ATCGGATATTCAATTATTATTAGTAAATAAGAATTAATATCAATAGGAGAAATATGAAGCG
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45 CGTCGGCAGGCTCGGTTTGGCTACGGACTGACCGGGAATACCGACATTTACGGCAGCGG
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50 CACCGCGCCTACCGCATCAACGGCAGCAAAACCTTTCAGACGGCATCCGCTACAAATC
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55 TGGCGTACAGCATACATTTAAGCAGGTTTTGATTTTCCAACCTTGTAATCCAAGGAGT
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10 TTTACGTTGATTTTACTGTGGCTTTGTTGTTTCTCAGTCTAATCTATTGGGTCAATGGT
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15 TTCGCCGTAAATAATAAAATAACCAACTTCCAACCAACCTGCTATCGGTTTGGTTGGA
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20 GACAGTATTGATGTATGTTCTTGTGAAAGATTATCTAAAAGCCAAAGCTGAAACCCAGT
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AATGATGCTGTCTATGATTGCCCCGCAATGGCAAACGGCTTGGACAATCAGGCATTTGA
25 AGACCAAGTGTTCCACACGCGGGCAGATGCACCGATGCAGTTGGCGGAGCTTTCTCAAAA
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30 CCCTTTCCGTAATAGAACAGGTATCCTATTGAAAAATTTCCCATTTATCATCGTCGAGT
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35 CGTATAGTAGAAAAAGAGCAAAAAGGGTTTTGGGTAAGTACCAAAATCAAAACAGTTGTA
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50 TCGGCAGCGCGTGGCATTTTAATGAACTATAAGAAATATTAATACACATTTAAGAGGTA
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55 GAAATTAGTCCCTCTTTCCATTAAATATTTTACCTGTTCCCAACCTTATTATTTTAA
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5 GAATAAGCGTAGGGTGGGCACTTGCTGCCACGCGTTCTGTTCAAGTTTATTATTGGGT
GAATATTTGGAATTTGAAGAAAACGGTACAAAGATTGCTGCGGAAATCGACAGTGCATGG
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 12>:

gnm_12

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25 AGGTTGCGTTTACGAAAAGATGATTGGGCTGTGGTCCGGCCAAAAGCCGTGAGGCAAGCG
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30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 13>:

gnm_13

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35 AGACCACTGTTTGACGCGGATATTTTGACAACGGATTTTCAATCCGCCGCATACCGTG
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 AAAAAACGAAATCCAACGGCGCAAAATGGAAAACGTCCTCAACGTGCGACTCATCCCGT
 TATTGTGCGTTCGGCGAAAGCCTCGAAGAGCGGAAGCCGGCAAGAACACGAAGTCATCG
 CCCATCAGCTTTCCATCCTGCAAGGGCTGGATACCAAAAACATCGCCGTGCGCTACGAAC
 CCGTCTGGGCGATCGGCACCGGCAAGTCCGCCACCGTCAACAGATTGCCGATATGCACG
 25 CATTCTATACAAAGAAATCTTGTCTTTGTGCGGAAGCGATGTTAAATCCGCGTCCTTT
 ACGGCGGAAGTGTGAAAGCGGACAACGCGCGGACATCTTCGCGAGTACCTTATGTGGACG
 CGCAACTCGTTCGGCGGCGCTTCATTGTGCTACGACTCCTTTACCGCCATCATCAGTCCCG
 CACAAAATGCGTAGAAAATTATGGAACCTTCAAACCTTAATTGGATTGTTAATTTAA
 TTTCCGCTTTGGCCGCTTCTGTTAGTATTGCTCCAACACGGCAAAGGCGCGGATGCCG
 30 GCGCGACTTTCGGAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 14>:

gnm_14

CATCGCCCGCCACGGCATGATTGACATCGACATCAGCTGCAAAGGCGACCTGCACATCGA
 35 CGACCACCAACCGCGAAGACATCGGCATCACACTCGGACAAGCAATCCGGCAGGCACT
 CGGCGACAAAAAGGCATCCGCCGTTACGGACATTCTTACGTCCCGCTCGACGAAGCCCT
 CAGCCGCGTCGTATCGACCTTTCCGGCCGCCCCGGACTCGTGTACAACATCGAATTTAC
 CCGCGCACTAATCGGACGTTTCGATGTCGATTGTTTGAAGAATTTTCCACGGCATCGT
 CAACCACAGTATGATGACCTGCACATCGACAACCTCAGCGGCAAAAACGCCACCATCA
 40 GCGCGAAACCGTATTCAAAGCCTTCGGGCGCGCCCTGCGTATGGCAGTCGAACACGACCC
 GCGCATGGCAGGACAGACCCCTCGACCAAAGGCACGCTGACCGCATAAAAAACCATACC
 GTCTGAAACACCCGAGGCTTTTCAGACGGTATCGGAACAGATAAGATTACACTACACTA
 CAAACAGAAAAGGAGTAAACATCATGTCCGCAACGAATACGCACAAATCGGCTGGATAG
 GCTTAGGGCAAATGGGTCTGCCTATGGTAACGCGGCTCTTGGACGGCGGCATCGAAGTCG
 45 GCGTATACAACCGCTCGCCGACAAAACCTGCCCCATCTCCGCCAAAGGCGCAAAAGTTT
 ACGGCAACACCGCGCAACTCGTCCGCGACTATCCCGTCATTTTCTGATGGTTCCGACT
 ATGCCGCGGTGTGCACATCCTGAACGGAGTCCGCGACGGATTGGCCGGCAAAATCATCG
 TCAACATGAGCACCATCTCCCGACCGAAAACCTCGCCGTCAAAGCACTTGTGGAAGCCG
 CAGnCGACAGTTTGCCGAAGCACCCGTTTCCGGATCGGTTCGGGCCCGCCACCAACGGCA
 50 CGTGTGATTCTGTTTCGGCGGACGGAAGCCgTTTAAACCCGCTGCAAAAATATTTT
 CCTCGTTCGGCAAAAAACCTTCCATTTTCGGCGATGTCCGGCAAAGTTTCGGCGCGGAAC
 TCGTCTTGAACTCGCTCTTGGGCATTTTCGGCGAAGCGTACAGCGAAkCGATGCTGATGG
 CGCGGCAGTTCGGCATCGATACCGACACCATCGTCAAGCCATCGGgGACTCGGCAATGG

ACTCGCCCATGTTCCAAACCAAAAAATCCCTGTGGGCAAACCGCGAATTCCTCGCCGCT
TCGCCCTCAAACACGCTCCAAAGACCTCAACCTCGCCGTCAAAGAGCTTGAACAGGCAG
GCAACACCCCTGCCCGCGTCGAAACCGTTGCTGCCAGCTACCGCAAAGCAGTCGAAGCCG
GCTACGGCGAACAGGACGTTTTCCGGCGTTTTACCTGAAACTGGCAGAACACTGATTGCCTT
5 TTCCAAACACAATGCCGTCTGAACATATTTAGACGGCATTATTTATCACCCACGCTTAA
AATCAGTCCCATTATGACTATATAGTGGATTAAACAAAAATCAGGACAAGGCGACGAAGC
CGCAGACAGTACAAATAGTACGGAACCGATTCACTTGGTGCTTCAGCACCTTAGAGAATC
GTTCTCTTTGAGCTAAGGCGAGGCAACGCGTACTGGTTTTTGTAACTCACTATAATCC
GCACAAATTTAGTCAATATCAAGACCAATTATGAACCAACTCGACCAACTTGGCACCCGT
10 ATCAACCTGATTGCAATGTCTTCGACAAATGGATCGGGCAGCAGGATCTGAATTACAA
CTCTTTGCCGTACTTTATACCCTGGCAACCGAAGCGAGCCGACGCAAAAGCATATCGGC
GAAAAGTGGAGCCTGCCAAACAGACCGTTTCAGGCGTATGCAAAACCTTGCCTGGACAA
GGGTTGATTGAATGGCAGGAAGGCGAACAGGACCGGCGCAAACGGTTGCTGTCTTGACC
GAAACAGGCAAAGCCTATGCCGCACCTTTAACAGAAAGCGCGCAGGAATTAGCGACAAA
15 GTATTTGCCACATTCGGCGACAAGCGCACAACTCGGCTGTTTGCCGATTGGATGCACTG
GCTGAAGTGATGGAAAAAACAATCTCGGAAAAATAAAAAATAGGGGGGCAAATATGTGGAA
AATGTTGAAACACATAGCCCAAACCCACCGCAAGCGATTGATTGGCACATTTTCCCTGGT
CGGACTGGAACCTTTTGATGCTGGTGTATCCGGTGTGTTGGCGGCGCGGCGATCAATGC
CGTGATTGCGGGGGAGGTGTGGCAGGCGTTGCTGTACGCTTTGGTTGTGCTTTTGATGTG
20 GCTGGTCGGTGCGGTGCGCGGATTGCGGATACGCGCACGTTTACGCGGATTATACCGA
AATCGCCGTGCGGTGCTGTTGGAACAGCGGCAGCGACAAGTCCCGCATTCGGCGGTAAC
TGCGCGGGTTGCCCTGTGCGGTGAGTTTGTACGCTTTTGAAGAACACCTGCCGATTGC
CGCGACATCCGTGATCCATATTCGGCGCGTGCATCATGCTGCTGGTGTGGAATTTTG
GGTCGGCGGTGTCGGCGGTGGGCATACTTGCCTGTTTTATGGCTTTTGCCAGCTTTTG
25 CGCCATCAGCGAAAACCTGTATTTCCGCTGAACAACAGCTTGAACGCGACAAACCTT
TATCCGAAAAGGCGACCGGCGCAGCTGTACCGCCATTACGGACTGCTTGCGCGCCTGCG
TGTGCTGATTTCCAACCGCGAAGCCTTCGGCTATCTCTGCGTCGGCACGGCGATGGGTAT
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CTATTCGGTCGGCACTTATCTGTGGATGTTGCCATGAGTTTGACGACGTGCCGCGATT
30 GGTGCAACAATATTTCAATTTGAAAGACATCGGACAACGGATAGAGTGGTCGGAACGGAA
CATCAAAGCCGGAACCTTGAATAATGCCGTCTGAACACGCTTCAAGCGGATTTCCATCCG
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AGAAGCTTCCGCTGCAAACCAATGCGCTGGATCAGGCTTTGCTTCTCTGATATTTAC
TTGATAACCTGTTGTTTTCAACGCTTTCAACAACAATCATCTGGTCGAAATCTC
35 GTCAATCAAGTTCAACGCCAACGCTGCGGACCGAACCATGCTCGCCCGTTGCCACTTC
CTCAATATCCAATTGAGGGCGGTTCTCGTGACAACTGCTTGAACAACGATGCGTTTC
CTCCAGTTCTGTGCGAATTTCTGTTGCCCTTTCCGTATTTTACCCATAAAAGTAAC
CGTGCGCTTAAATTGCGCCGCGTCATCACATCCACATCAATATCATGTTTTTCAACAG
GCGGTGGATATTCGGTACTTCCGCCACACACCCACCGAACCGACAAATCGCAAACGGAGC
40 GGAAGCAATTTATCCGCCACACACGCCATCATATAACCGCGCTCGCCGCCACCTTATC
GACGGCGACGGTCAGCGGAATATTGCGTTCGCGCAAACGCTAAGCTGCGAAGCCGCCAA
ACCGTAACCGTGAACACGCGCGCGGACTTTCCAATCTGAGCAGAACCTCATCTTCAGG
CTTGGAATCAAAGCACCGCGGTAATCTCATGACGCAAGGATTCTACGGCGTGTGCATA
CAAATCGCCGTCAAATCCAACACAAAAAGGCGGGATTTTGGCTTTCGGCAGATTTCTC
45 CCCACCCTCCTTCAAACGCTTTTCTCTGCTTTGGCTTCCGCCTTTTCTTTTCTTTTC
CTCTTTTCTGATGTTTTGCCTCTTCCCGCTTAAAAAGAATGCTTCAAACGATTGCCG
CTGTTTTTTATAATTTCCGAAAAATCCGTGAGTACGACACTGCCGCTTTCGACTGTTT
CTTACTCTGTACGATAGCCAACACAATCAGCGCAATTGCGCCGAACAGGTAAGCAGTTC
GAGCAGGAAAAATACCGTAATTAGTAAATTTCTTCCACATTGATTGGATTCTCTTG
50 TTCAGGCATGAACATGTCAATATTGTCCATCACCCTCCGACAGATAAAAAAATAACCGCT
TGGAGCGGCAATTGTCAATTTTCACTTGGTGCCCGGAGCGGAATCGAACCGGCACGGGAT
GTTTAGTCCCGACGGATTTAAGTCCGTGTGTCTACCTATTTACCACCCGGGCATTG
TGAAAGTGGAGGCGGGGCGGGATTTAACCAGCGCTGATGAAGATTGCACTCCTCAT
AGCATAAACACTCTGCCACCCGCCATAGTACGATAATGGAGGCGAGAGTCGGAATCGAA
55 CCGGCGTAGACGGATTTGCAATCCGCTGCATAAACCTTTGCTATCTCGCCCTAAACTG
GCTTATCTAAAAAATTTGGAGCGGGAACGAGTCTCGAACTCGCGACCTCAACCTTGGCA
AGGTTGCGCTCTACCAACTGAGCTATTTCCCGCGGTTCAAACATATCGGTTTTTGGAGCG

5 GGAACGAGTCTCGAACTCGCGACCTCAACCTTGGCAAGGTTGCGCTCTACCAACTGAGC
TATTCCTCGGTTGATATGTTTGAATAAACTTGGAGCGGAAACGAGTCTCGAACTCGC
GACCTCAACCTTGGCAAGGTTGCGCTCTACCAACTGAGCTATTCCCGCAATGATTGCGGA
AGAATGAAATTTTGGAGCGGAAACGAGTCTCGAACTCGCGACCTCAACCTTGGCAAGG
TTGCGCTCTACCAACTGAGCTATTCCCGCCGATTTCATTCTCGATATCGAAGAGACAC
AATTATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 15>:

gnm_15

10 GTTCTGCTGTATGATTAGCGTTTATTGATTGCTTTCTCATTGGATATGAAATTCGT
CAGCGACCTTTTGTCCGTCATCTGTTTTCGCCACCTATACCGTTACCAAAACATGAT
TGCCGCAACGGCGGTTCGATTGTTGCGGTGTGGTTCAGGCGGCTTTTCTGTATTGGAA
ATATAAAAAGCTGGATACGATGCAGTGGGTTCGATTGGTGTGATTGTGGTATTCGGCGG
CGCAACCATTTGTTTGGGCGACAGCCGCTTCATTATGTGAAGCCGAGCGTTTGTGTTG
15 GCTGGGCGCGCTGTTCCGTGTGGGCGAGCCACCTCGCCGTTAAAAACGGCTTGAAGGCGAG
TATCGGCGAGGAGATTACAGCTTCGGATGCCGTATGGGCGAAATTGACGTATATGTGGGT
CGGTTTCCTGATTTTATGGGTATCGCCAACCTGGTTTGTGTTTACCCGGTTCGAGTCGCA
ATGGGTCAACTATAAATGTTTCGGCTCGACTGCACTGATGCTTGTGTTTCTTTATTATTCA
GGGTATTTATCTGAGTACCTGTCTGAAAAAGGAGGATTGACTGTGGAATATTTATGTTG
20 CTGGCAACAGACGGGGAGGATGTGCACGAGGCGCGTATGGCGGCACGTCCCGAACACCTC
AAACGGCTGGAGACGCTGAAGTCGGAAGCCGGCTGTTGACGGCAGGCCCGAATCCTTTG
CCGGAGGACTCCAACCGCTTTCGGGCGAGTTGATTGTGCGCGAGTTCGAGTCTTTGGAT
GCGGCGCAGGCTTGGGCGGAAGACGATCCCTATGTTTCATGCAGGCGTGTACAGCGAAGTG
CTGATCAAGCCGTTTAAAGCGGTGTTCAAATAATGCCGCGCGTCGATTGATCCGCGAAC
25 GCGTCGAGACGCTCGATCCGCTGGTGTGGAAATCGGCGATGAGAGCCATCTGCACAAAG
GACACGCGGGCAATACCGGCGGCGGACATTATGCCGTTTGGTTCGTTAGCGGCCGTTTGG
AAGGCGTAAGCCGCCTGAACCGCCAGAAAACGGTCAAATCGCTGCTCAAAGATTGTTTT
CAGGCGGCATGATTCACGCGCTCGGCATCCGGGCGGCTACCCCTGACGAGTATTTCCATA
CGGCGGACTGAATGAAGTCTGCCCGAACATTTCAATTTAAATTTAAAGAGAGAAGATTA
30 TGAAGCAAAAATCCTGACTTCCGTTGCACTGCTTGCTGTTCCGGCAGCCTGTTTGCCC
AAACGCTGGCAACCGTCAACGGTCAGAAAATCGACAGTTCGCTCATCGATGCGCAGGTTG
CCGATTCGCTGCGGAAACAGCCGTGCCGAAGACAGCCGCAACTGCGCCAATCCCTGTC
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GGTCCGCGAGATTTAAAAATGCGCTTGCCAAATTCGCTGCCGAAGCGAAAAAGTCGGGCG
35 ACGACAAGAAACCGTCTTCAAACCGTTTGGCAGGCGGTAAATATGGCTTGAACGGCG
AGGCATACGCATTGCATATCGCCAAACCCAACCGGTTTCCGAGCAGGAAGTAAAGCCG
CATATGACAATATCAGCGGTTTTTACAAAGGTACGCAGGAAGTCCAGTTGGGCGAAATCC
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TCGATGCCGCTTTGAAACAATATTCCCTCAACGACCGTACCAACAGACCGGTGCGCCGG
40 TCGATATGTGCCGCTGAAAGATTGGAACAGGGTGTCCGCCGCTTTATCAGGCAATTA
AGGACTTGAAAAAGGCGAATTTACGGCAACGCCGCTGAAAAACGGCGATTCTACGGCG
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AGATTGCGGGCAACCTTCAGGCGGAACGGATTGACCGTGCCGTGGTGCCTGTTGGGCA
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45 ACAGGCGTTTTGCCGCCGCGCAGGACAGGGAATACCATGAAACAGAAAAAACCGCTGCC
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50 CGCTTTAAATCGCCGAAGCGTCTTTTATGCCGAGGAGTACGTCCGTTTCTGGAACGT
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CTCAAAGGGCTGTCTTTGAAGGGCTGATGAAGCGTTATCCGAACGACGAGCAGGCTTTT

GACGGTTTCATTATGGCGCAGCAGCTTCCCGAGCCGCTGGCTTCGCAGTTTGCCGCGATG
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5 GAGCAGGGTTTGAGACAGGAAAAAGCCCGCTTGAAAATCGATGCCCTTTTGGGAAGAAAC
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10 GTCGTGTTACTCGGCGTAACGCATAGCGACACAGAAAAGATGCACGCTATATCGCCGAC
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20 TCGCGCTGCCCGAGTCCGCGCGTGCAGAAAGGCTCGTTGGGCGCGTGTCTGATGAACGAA
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25 TACCGCTCAAGCAGGAGTTTCCCGGGCTGGAATCATCATCAACGGCGGCATCACCACC
AACGAAGCAATCGCAGGACACCTGCAACACGTTGACGGCGGTGATGGTTCGGGCGGAGGGC
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55 ATAATCATCATACCCGCCCCCATTTAACCTTTGATTTTGGAAACAATTATGCAAAATC
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5 ACGGGCGATGCCGTCTGAAAGCCTTTTCAGACGGCATCGGGAAAATGCCTAAGCCAAAGGC
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10 GGATAGGCCGGGTTTTTCACGCCGGTAGATGCCATAAAAGCTGCACGCGGTTTGCGCCT
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ATCTCGTGTCTTCCAAGAAGGCAGGTTGTTGTACGAAGTCGGCAGCGACGAAGCCGTTT
ACCATACCGAAAACAAACAGGTTCTTTTAAAAACAACGTTGTGCTGACCAAAACCGCCG
ACGGCAAACGGCAGGCGGGTAAAGTTGAAGCCGAAAAGCTGCACGTCGATACCGAATCTC
AATATGCCCAAACCGATACGCCTGTCACTTTCCAATATGGTGCATCGCACGGTCAGGCGG
5 GCGGCATGACTTACGACCACAAAACAGGCATGTTGAACTTCTCATCTAAAGTGAAAGCCA
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10 GTGAGGGCGGAAGGTTCCGCGTCCGCTTACGCCAGACATTGGACGGCGGCAAAGGCACG
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AAATCCGGCAGGGTCAGCGTTCGTTATCCAGCCTTCCAGTACGCAAAAATCCGAATAATCC
15 CAAAATGCCGTCTGAAATATAAACCCGTTTCGGACGGCATATGCCGACCGAAGATATTGA
AGAGATATTTATGAGTGCAAACGTCAGCCGCTTGTGTTCAAACCTGCAAAAAGTTT
CAAAAACGCCAAGTCGTTAAAGCTTCTCCCTCGAAATCGAAAGCGGCGAAGTCATCGG
ACTGCTCGGGCCCAACGGTGCGGGTAAACCAACAGCTTCTACATGATTGTCGGACTCAT
CGCCGCCGACGCAGGCAGCGTAACCTAGACGGACAAGAATTGCGCCACCTGCCCATACA
20 CGAACGCGCCCGCTCGGTGTCGGCTACCTGCCGAGGAAGCCTCGATATTCGCAAAAT
GACCGTCGAACAAACATCCGCGCATCTTGAAATCAGAACCAGATAAAAATCAAAT
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40 TGGTCACCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 16>:

gnm_16

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40 CGCGCGTATTTGACGTTGCTGTCCGCGAGGCGGGTGGGTGGGGAACATTTTTTCGCGCATT
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35 CTCTTTTCTATGGAATACATCGCTTAAGAGGACGTACAGCCAATTTTLAGGGGAATAAT
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5 CGTCGAGCGTGAAGTGGTGGGCTTTTTTCGGCATCGAGTGCAAACAGGATGCGACGGGCAA
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 17>:

gum_17

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15 CGTTTGGTTGTGATTTGGAACAGCAGCGTTCCCAAGCCTGCGCCCAAAAGCGCAAGAGCC
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[illegible]

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 18>:

5 gnm_18

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 19>:

gum_19

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-235-

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30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 20>:

gum_20

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 21>:

30 **gnm_21**

ACATATTTAGCCAAAACCTTATTTCAGCAGCATAGTCATACwCCACGACCAGCGGtCGCAT
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45

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 22>:

gnm_22

50

AATTAATAATAATTATCATTATATTAATATGTACAGATAATATCAAGCCGTTTTTATAGT
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10 CTAAAGTGGGAATCCAGGACGCAAAATCTCAAGAAACCGTTTTACCTGATAAGTTTCGGC
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AAACAAACAGCCACAGAACCGTCAACGCCATATCGTCCAACCGCGAACCCAAATCCTCCA
CGCGGACAACGAGACGCCGATCAGCAGCAGCACAGCATACCAAGACCGATAGCACCT
TATCCAAAGCGGGCAGGTAAGGCTTGGGCACACGGATAAAAAATCCGGCAAACATCGGTA
TCAATACCGAAAGCAACGTATCAGGCTGTCCATCTACTGCTCTCTTTATTGCGCGATG
45 ATATGTGCGGTTTAAAAATTGCCGTCTGAAAATTGCAGATACCCGCATCCATATTTAGA
CGGCATCAGGTTCCGCAATAAAAAACCGCTGAAGGTTGAGGCGGCTTATCCGCTCCGGC
ATTCAATCTTCCAAAGTCTTTTCCAAACGCTCCATACAGTTGCCCAAATGGCGGCGCAGG
ATTTTGACCACGCGGTTGCGCCTGCCGCGCAGCAGGTCGAGGATTTCCGCGGTGTTG
GAATGCGTATGCGTATTGATGGCGTGTTTTCTCGCGATGCACGCCGCCACGGCGACA
50 ATCAGGGAAGACCGCGGCACAGCGTATTATAATGTGAAACAGCACATCGTTGCCACC
AGGCGCGCCAGTTGCGAGTGAAGGCATTGGACAGGCGGTTCCAGCCGACGCGGTGCGCC
CTGCCGAGGCCCTTCTTTCGCGCGGTATCATCGCATAAAGCGGCTTGAGGCGCGTTTCC
AAATCCGGCAAATCTGCGAGGATATTCAAATCATCGTCTCCATTTGATGCGCGCATTG
AACACATCTGCAATTTCTTCAAATCGGGAACGTGGACGAACGCGCCCTGTTGGGTTGC
55 AAATCGACAATCTGTGTCGTGCCAAAAGCGACAGCGCGCCGCGGACGGTGTGCGCGAA
CACACCATCTGACGGCAAAGTTCGGATTGCGTCAGCTTTTTCGCGGCGCAGCAGCACTGA
TCGGTAATGCCGTCCAAATCAGGGCGTAACACGGAACAGCTCCGAATCGTGCCGCTCT

TCGAGAATCAGGGAAGACGTGGTCGGCGCATGGATAATGTCGTCGTTTTCAAAGTTCATG
ATGTTTTCCGTATTTTTACGCTTTCAAATTTTTAAGATGTTTTAAGGCGGCTGTGTTTC
AAATCGTGTGAGAGGAATTAAAGCATTGCACAAATTTATTTATAGTGGATTAACAAAAA
5 TCAGGACAAGGCGACGAAGCCGAGACAGTACAAATAGTACGGAACCGATTCACTTGGTG
CTTCAGCACCTTAGAGAATCGTTCTCTTTGAGCCAAGGCGAGGCAACGCCGTACTGGTTT
TTGTTAATCCACTATAATTCAATAAATTAATATATGGCTTAAATAACGGGATTCTCGCC
TCCCGCCCGCCCGCAGAAGCAGGCGGATATCATTTTAAACGCGGCATTTAAATTTGAC
CGAAAAATTGTTGACAATCCGAATCAAGTCTGCACAATACCCGACAAGTCCAAGTATTA
10 TAAAGGCTGAATAAAGAGGAAACAGCAGGCGAGATATATTCGGGAGGTGCAGTCCGAATAT
ATCTGCTTTTTATGCGCCTCCGATTGCCGTGCCGACCTTTCCCTTCAGACGGTATCAG
CCGTTTTCCCATATAATGCCGCCGATGCCATTTATCTGCCCGGCAATTTCAAACCTGTG
GGTAATCTTTGCCGCTTTGCCAACATAATCGAAGCCGAACAGTATTTTCGGCAGACAT
CTGAACGGCGCGCTCAATGGCCGATTCTTTCAAATCATGCCCGAATACTTTGAAATGGAT
15 GTGGATTTCGGTAAACACGCGCGGCGCATCGTCCGCCCGTTTCGCGTAACCGTCGCACG
GCAGTCAGTCACCTTTCTGACGCTGTTTTTCGGCAATCATCACCATCGATGCTCGAACA
GCCCGCCACGCCCAACAGCAGCAGCTTTCCAAAGGGCTGGGCCCGCGCTTAGCCTTACCTTC
TGCCGCCGACCCCTCCATAACGACGCTGTGCCCGCCTTCCGTCTGCCGACAAAACACAT
CCCGTCTATCCATTTTGATGTAACCTGCATGGTGTCTTCTGAAAATAGCGTTAAACCC
20 GCTTTGCATATGGCGTTATTGTAAACAATTTCAAGCGGCTTATGCAGAAATATGGACAAA
ACGGCAAAAAACACTTGAAACCGATTACGGTTTGGCTGCCGTGGCCGTTGATCTGCAC
CGATTTGAGTTTACGCGTATAGGTTTTGCCGTCTCGGTATAGCCGATTGTGCCGGAAT
ATTGTTTCAGGACGGTGCGAAGAAATACATTACCGCATCGTCCGCCGCGCCGACCCGATA
TTTGACGACTTCGGTTTTCCACGCCGCTATGCTGTATTTTCTGTACCCGCTTATTCAA
ACCGCCGACGGAATAAAGTTTTTGGCGTTGGTGATTTTCAGCCCCGGGGGAGTTTCGC
25 GTCATTTGCCGCCAACTGCCAGGCAAGCGTGAACAAATCCATAGCCTTGGGGCTTTGCTC
GGTTTTGCTCTCGCCCGCTTTGCCGTAAGTTACGCTGCCGTCCGCGAATTTGGCTTCCGC
ATACAGTTTCCCCCTGCGTATGCTCTATAGTAGGTAGGGTGCAGGTTATTGCCGACAAC
CGTACCGCCGGACTCGAAACGGATATTGTATAGCGGCACCTTAATCGTCGAAACGATTTT
GTAAGCATTGCCGTGCGTTCAAATGTCATCGTGGCGGGAATGCCGTAGCTGCCGGAATA
30 GTGCAGCACGGCGGATTGGGGCAGCCCTGCCGCATACGCGCACGGCAGGGCGGCGGACAA
AATGGCGGCGGAAAATATATTTTTAAAGTCTTCATCATTTGCTCCCGCCCGGTTTACGC
CGTCAGAAAACGGGCGGCATCGGCGTTTTCCGAATTTCTGACGCGGTTTCCCTCAATAAT
CAGGCGGCCGCGGCAAAATCGGCAACGGCTTTCCGGATAAAGTTTATGCTCGACAGCCAA
AACCCGTGCCGCAATATCGTCTGCCGTATGCCGTGAGTATCGGCACAACCCCTTGCGA
35 TACAATCGGGCCGCAATCCAGTTCGGCAGTAACGAAATGGATGGTGCAGCCGGAACGCG
GCAGCCCGCCTCCAAAGCGCGTTCTGCGTATGAAGTCCGGTAAACGAGGGAAGGATGGA
CGGGTGAATGTTTCATCAGCCTGCCCTCGTAACGGGCGCAAACTCGGGGGTCAGAATCCG
CATAAACTGCCAAAACCAAGTCGGGTTGATATGCGTCGATTTTCTCCATCATGGC
GGTATCGAAGGCAAGCCGGGATGTAAAGTTTTTATGATTAGGCTATCGGTCCGGATGCC
40 GCGTTCCGGCCGCCATTGCAAACGGCAGCCGTTTCTGCTGTTGCTCAACACGGCGGCAAT
GCGGACGTTGTGAATGGCGGCATTGACGATTGCCTGCATATTGCTGCCGCGTCCAGAAAT
CAGGATGACGATGTTTTTATAATGGTGCGCTTTTGAAGGGATGCCGTCTGAACCGCTG
TTTGGTGGTTTTGACGCGCATTTGCCGTAAAAATGCCGAAAACCTGTTTCGGGCATGGA
TTCCGACTTAATTTACTTTTTTATGTCGACTTGAGCCGGCTGCTTGGCGGGCGCGTTTT
45 CGGGTGCGCCGATTTTGACCAAGTTTACATCAATACCAAGTGGCGTTTCGACCGGATTT
TGTCGCCCGCACCCGTGTTGCGGTTAGCAAGGTTGGACGGGATGTAGAAGCTGGCTTCGC
CGCCTTCTTTGAGAAGCTGTACGCCCTCGGTCCAACCCGGAATCACTTGGCTCAAAGGGA
AGGTGACCGGGCCCGGCTTGGCTTGGCTGCTGTGCAATACCGTACCGTCAATCAGGCGGC
CTTCGTATTCACGGTAACGATGTCGTTTGGTGGCTGTTTGCCTTCGCCCTGTTTGG
50 TGATTTGATTTGACAGGCGGAAGCAGTGGTCTTACGCGCTTTCGGCGGCATTTCTT
TCAGAAAGGCTTCGCCCTTTTCTTTATTTGGCCTTCGCGTCCGCCTTGTTTCTACGG
CTTTAGCCTGTTGTTTCTGAAGGAATTTTCATCATGACTTCTGAGCCTGCTTTCGGTCA
TTTTGATTTCTTTCGCCGTATACACTGCCTGCATGGCTTCGGTAAAGACTTTCAAATCGA
TTTCCGCGCCCTGTTCTTTCATTTGCTTCAGGGAGCGTCCGATGTCCACGCCCATCGCAT
55 AGCTTGCTGCTGCATCGTGTGCCGATCGAAGAGGTGTGCCCTGCCGGAAGAAGCGG
CGGCAGGTTCCGATGCAGATGCGGGGCGGCTTCTTTTTTGCCGACGGCGGAAGTGCCA
AAGTCGGCGGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 23>:

gmm_23

5 CGTTTTTCATCACCAATGCTGCGTCAGGTTGTGGAACTCGGCGCGACTGATGCTTGTGTC
GATTGCCATGCCGTCTGAAAGCGTCGCCTGAATGCGCGCTTCGGTTTGCGTGGTTAATTG
TTCTTTGGCGGCGCGGACGAGCGAGAGCAGGAGTTGGCTGTCTTGTTCGTTGAGTTGGGA
GAGTCCGTTTTGTTTCGAGCAGGCGGCAGAACAGGCGGTGGTCGAAATCGTCGCCGCCCAA
CGCGCTGTTGCCGCGGTTGGCTTTGACTTCAAACAGTCCTTTGGTCAGTTGCAATACGGA
10 TACGTCGAATGTGCCGCCCTTAAGTCGTACACGACAAACGTGCCTTCCGAGGCGTTGTC
CAGCCCGTATGCGATTGCGGCGGCGGTGGGTTTCGTTGAGCAGGCGCAATACGTTCAAACC
CGCCAGACGCGCGGCATCTTTGGTGGCTGGCGTTGGGCATCGTCGAAATAGGCGGGGAC
GGTAATCACCACGCCGACCAAATCGCCGCCAAGGTTTCTTCGGCGCGCGATTAAAGGGT
TTTGAGGAkTTCCGCCGACACTTCGACAGGCGTTTTTCACCCCCTGCCGCGTATGCAGTTC
15 GATAACGCGTTGATTGTCGCCGAAACGGTAAGGCAGGTAGTGCCTATTTnAGGCGGCGC
ACGGCGTTGCGTTCTTCCATCAGACGCGAATCGGCAACGCGGGTnTCGGGGTGGGCGCAA
AACGGGCATTTTCATCGGGTTTCGTCTCTATGTCTGAAGTTTCAGACGGCGACGCCGC
GGGCGGGCnATTTCAGACCTTCTTCGGCACTCATATAGACGGGGTTTTTCGGGACGGTCG
TGTCGGACGATGTTGCCCTTCGCGGAACATGACCAGTTTGTnCACGGCAAGTTGGGACCAT
GATTChTCGCGGGTCA

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 24>:

gmm_24

CGGCGAAAATAGCGGTCAATGAGGCGAAGCCTGCCGATGCCAATGCCAAAACAGCCATG
CGTTGCTGCCCATGTTTTCTCCTTGGATTGTGAACAATATGAACGGTATTTTTGTTGCTG
25 CGTCAAAAATTTCACTCGGGTTTGGTGCGGATAACGTTATAATATGCCTGATATTATTT
TCAATCCACCTGTTTGTGCGCTGATGCTTCAGACGGCATGTCCCTCCTCATTTCTAAAG
GAAAATCATGAGCTTCAAACCGATGCCGAAATCGCCCAATCCTCCACCATGCGCCCGAT
TGGCGAAATTGCCGCCAAGCTTGGTCTGAATGCCGACAACATTGAGCCTTACGGTCATTA
CAAGGCGAAAATCAATCCTGCCGAAGCGTTCAAACCTGCCGCAAAAACAGGGCAGGCTGAT
30 TTTGGTTACCGCCATCAACCCGACTCCGGCGGGCGAAGGCAAAACACCGTAACCATCGG
TTTGGCGGACGCGTTGCCGCACATCGGCAAGATGCCGTGATTGCCCTGCCGGAACCTTC
TCTGGGGCCGGTGTTCGGCGTGAAAGGCGGCGCGCAGGCGGCGGTATGCCAAGTTTT
GCCGATGGAAGACATCAACCTGCACCTCACCGGAGATTTTCAGCCATCGGTGCGGCAAA
TAATCTGCTTGCCGCGATGCTCGACAACCATATCTACCAAGGCAACGAGTTGAACATCGA
35 CCCCCAACGCGTGCTGTGGCGGCGGTGGTCGATATGAACGACCGCCAGTTGCGCAACAT
CATCGACGGCATGGGTAACCCGTTGACGGCGTGATGCGTCCTGACGGTTTCGATATTAC
CGTTGCTTCCGAAGTGATGGCGGTATTCTGTCTTGCCAAAGACATCAGCGATTTGAAAGA
GCGTTTGGGCAACATCCTTGTCGCCTACGCCAAAGACGGCAGCCCCGTTACGCCAAAGA
TTTGAAAGCGAATGGCGCGATGGCGGCATTGCTTAAAGATGCGATTAAGCCCAACTTGGT
40 GCAAACCATCGAAGGCACGCCCGCTTCGTACACGGCGGCCGTTTCGCCAACATCGCCCA
CGGCTGCAACTCCGTAACCGCAACCCGCTCTGGCGAAACACCTTGCCGATTACGCCGTAAC
CGAAGCAGGCTTCGGCGCGGACTTGGGCGCGGAAAAATTCTGCGACATCAAATGCCGCCT
TGCCGGTTTGAACCTGATGCGGCTGTTGTCGTGGCGACTGTCCGCGCGTTGAAATATAA
CGGCGGCGTGGAACGCGCCAACCTCGGCGAAGAAAAATTAGACGCTTTGGAAAAAGGTTT
45 GCCCAACCTGCTGAAACACATTTCCAACCTGAAAAACGTATTTCGGACTGCCCGTCGTCTG
TGCGCTCAACCGCTTCGTGTCCGACGCCGATGCCAGTTGGCGATGATTGAAAAAGCCTG
TGCCGAACACGGCGTTGAAGTTTCCCTGACCGAAGTGTGGGGCAAAGTGGTGCGGGCGG
CGCGGATTTGGCGCGCAAGTCGTCAACGCCATTGAAAGTCAAACCAATAACTTCGGTTT
CGCCTACGATGTCGAGTTGGGCATCAAAGACAAAATCCGTGCGATTGCCCAAAAAGTGTA
50 CGGCGCGGAAGATGTTGATTTACGCGCGGAAGCGTCTGCCGAAATCGCTTCACTGGAAAA

ACTGGGCTTGGACAAAATGCCGATCTGCATGGCGAAAACCCAATACTCTTTGAGCGACAA
CGCCAAACTGTTGGGCTGCCCCAAGACTTCCGCATCGCCGTGCGCGGCATCACCGTTTC
CGCAGGCGCAGGTTTCATCGTCGCCCTGTGCGGCAACATGATGAAAATGCCCGGCTGCC
5 CAAAGTTCGGGCTGCCGAGAAAATCGATGTGGACGCGAGAAGGCGTGATTACGGCTTGT
CTGAAACGGTTTTCTGAAACCGGATGCCGTCTGAAGCCGTTTCAGACGGCATTTTTCGGA
ACGCGGGCGGCGGTATGCTATAATCCGCCGTTAAATTTCTCTATTTTCAGGAAAAACAT
GAGTTTGAAATGCGGCATCGTCGGTTTGCCCAACGTGCGCAAATCCACCCTTTTAAACGC
10 GCTGACCCAATCGGGAATCGAAGCGGCAAACTATCCTTTCTGTACCATCGAACCCAACGT
CGGCATCGTCGAAGTCCCCGATCCGCGTATGGCCGAATTGGCAAAAATCGTCAATCCGCA
AAAAATGCAGCCTGCCATCGTCGAATTTGTGATATTGCCGGTTTGGTTGCGAGGCGCGAG
CAAAGGCGAGGGCTTGGGCAACCAAGTTCCTTGCCAACATCCGCGAAACCGATGCGATTGT
GAATGTCGTGCGCTGCTTTGACGACGACAACATCGTCCACGTTGCGAGGCCGCTCGATCC
GATTGCCGACATTGAAACCATCGGCACAGATTGGCACTTGGGACCTGGCAAGTGTGCA
15 AAAAGCCATCGTCCGCGAAGAAAACGCGCCGCTCAGGCGACAAAGACGCGCAAAAGCT
GGTCGATTTGTGCAAAAAACTGCTGCCGCATCTGGACGAAGGCAAAACCGTGCGTTCTTT
CGGTTTGGACGCGGAAGAACGCGCGATGCTCAAACCGCTGTTCTGCTGACCGCCAAACC
GGCGATGTATGTGGGCAACGTGCGCGAAGACGGTTTTGAAAACAATCCGCACCTCGACCG
CCTGAAAGAAATTGGCGGCAAAAGAAAACGCCCCCGTCTGTCGCCGTTTGGCGCGGATGGA
20 GAGCGAAATTGCCGAATTGGAAGACGACGAAAAAGCCGAGTTCTCGCCGAAATGGGCTT
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CTATTTACCGCCGGTGTGAAAGAAGTCCGCGGTGGACGATACACAAAGGCGACACCGC
GCCGCAAGCCCGCGGTGATTCTATACGGATTTTGAACGCGGCTTCATCCGCGCCCAAGT
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25 AATGCGTGTGGAAGGCAAGGAATATGTCGTGCAAGACGGCGATGTGATGCACTTTTGT
TAACGTGTAACCAAATGCGGCAGGTTTCAGCGCGCTTGGCGGAAATGCCGTCTGAAGCC
GATTTTGATGATTTTCGGCGTTTCCCGTACCGCCGGAATGCAGCCGCATCAAAATAAAT
CCCACCCGCATTTCCGATTGCCCCCTCCCGATTCTGCAAAACAAACCGCTGCCCGCC
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30 GACGGCATTTGCGCCGCGCGGTTTCGAGTATAGTGGATTAACTTAAATCAGGACAAGGC
GACGAAACCGCAGACAGTATAGATAGTACGGCAAGGCGAGGCAACGCCGTACTGGTTTTT
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35 TCTTACCGCGAAATGTGCGGGGGGGGGGAGGTTTTCCCTGAAGGCATTTTATATCCG
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40 TCCGATACTGTGCTGCTTGTGCGCCGCAAAAGCCTGCGCGTACAGTTCCGGCTTCCTTGC
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CCTGCCACCTGCCGCGCTGCGAATTACTGATAGGATCGCTGACCGCGCTGTGGATGCG
CTGCCGCAACCTGCCGTGCGCAGACGCTGTGCCGCGCTCGGCGCATTTGTTGCCGTGTG
CATATTGTCAACCTGCTGTTTTCTATTGGAACAAACCGCCTATTTCCCGGGCCCCGC
CGCTTTGATTCCCTGTCTGGCTGTTGCCGCGCTGATTTATTTCAATCATTACGAACACCC
45 GCTTAAAAAATTTTCCAATCGAAAATCACTGTTGCCGCCGGTTTGATTTCCTATTGCT
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5 GGACAAAGACCACATCAACCCTTACGGCGGCACGGAATTGGCAAAGCGTTTTTCCGAAAA
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10 CTGCTGCCCGTATTGGCATTGCGCCGCTTCCAACAGGCGGGGCATACGCCGATTGCTTGT
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15 AACAAAGATCCGTCAAACAGCGCATCGACCGCGACGGCGCAGGCATTTCTTCACCGAG
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20 AAATACTTTACCTTCTGTCCATCGAAGAAATCGATGCCATCGAAGCCAAAGACAAGGCA
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25 AAAGAAGCGCGCGGCTTTGTGAACAGCAAAGCGGTTTGTCTCAACGGCAAACCTGCCGAA
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30 CCGCCTGAGCGGGAATGACGAGTTTCAAGATTACGGTGTGTGCGGAACGCAACTGAACCG
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GCGATGTTTCAACACATAGCACCGCGCTGCTGCGGTTTTTGTGCGTTTGGCGGTTTCG
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40 TTTTCGCACTCCGACCGCGCAGGATGCCACCGTGTGCGATCAGCCCCCTGCGCACCAAGC
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45 ACATCCGACACGAGTACCGCCGTGCGACAAGCCCTTTCAGACGGCAACCTTGCCCTATG
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50 TCGACTTTCAAGGCGACCTGTACGGAAGGGCTGAACGTCCGCTTCTGCACAACTGC
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5 GTCATGCCGTCAATAAAATTCTCAAAGACATCATTATCCGAGCAAAACCCAAGCCGTT
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10 CCGCCGAACAGATTGCCCGTCAGAAAAAGACTTTATCCGCTTGGGCGTGTGGGCGACT
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CGGACGGCAAAACCTGCGCGACAAAGCCATCAAGGCCGTGGACGACACCGAATTCTTCC
25 CGTCTTGGGGTTCGCGCGCTTGGGAAGCCATGATTGAAGGTCGTCTGACTGGGTGGTTT
CACGCCAACGCTATTGGGGCACGCCGATGACTTTCTTTGTTACAAAGAAACGGGCGAGC
TGCATCCGAACCTCTGCCGAACCTTTTGGAAAAAGTTGCCCTGAAAATCGAAGAAAAAGGCA
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ACGATAAACTTTCTGACACAATGGACGTATGGTTGACTCCGGCTCGACCCATTATTCCG
30 TTGTGAACAACCGCAAGAAATGGAATGGCCGGCTGATTGTATCTCGAAGGCAGCGACC
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CGAAATCCATCGGCAACGTCGTTGCACCGCAAGAGGTTTATAACGAATTCGGCGCAGACA
TCCTGCGCCTGTGGGCGGCATCTACCGATTACAGCGGCGAATTGGCGATTTCGAAAGAAA
35 TCCTCAAACGCGTAACCGAAAGCTACCGCCGTATCCGCAATACCTTGAGCTTTTGTGTTG
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ATCCGCGTTATGCTTCCACTTTGCCGTAAAAGACATTGTTCTTTCTGCTCGGAAGACT
TGGGTGCGTTCTACCTCGACATCTGAAAGACCGCTCTACACCACCAAGCAGACAGCC
40 ATGCACGCGCAGCGCACAACTGCCCTGTATCACATCACACGCGATTGGTTCTCTTGA
TTGCACCGATTTTGTGCTTACCGCGGAAGAAGCGTGGGACATCATCGGCGGCGGCGAAG
AAGACAGCGTCTCTTCCATACTTGGCAGAGTCCCGACCATCAACGAAAAACCGAAG
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TCGAGCCTTTGCGCGCGACAAAAACCGTTCGGTTCTGCTTGAAGCCGAAGCCGAAATTA
45 CCGCGCGGAAGAAATGGCCGGCTATCTGAATGCTTGGGCGAAGATTGCGCTTTGCTT
TGCTGGTGTCTAAGCAGAAGTGAAGTAGGCAGCGAATTGCCGTTGCCGCTAAAGCCA
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 25>:

5 gnm_25

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 26>:

gnm_26

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55 TTGCGGACTGATTGCCCTGATTGCCCTGTGGGAATATGCCCGTATGGGCGGTTTGTGCAA
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5 GACCGCGGCGGATGAGCGACACCACCGTCGGCAACGGCACAAAATCGACAACCAAGTC
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20 GTCGAAGCCATCATCATGTGTGCCAAACGCGTGGTTTGAGTGTTCAGAAAAAGTTCGTCT
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25 TCCAATTTGCCAGCCTCGGCGAAATCCCGCAGGACAAAAAATACCGCGACGAGCCGACCA
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 27>:

25 *gmm_27*
ATTTCCGCGAGCCGTAGGGTGGGCTGTAGGGTGGGCTTCAGCCACCAATTTACCGCAT
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40 CGTCCACAATATACCAAGGCGGGTACGGCGCGCGGTGGCTTTTGTATTGCGGCTGTTGC
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 28>:

gnm_28

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5 TGTAATTGGACGACGGGCTGCCGTTGTTTTCTGTTTCGATGATGCTTTGCAG
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10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 29>:

gnm_29

15 GAAGACTTTGATTCTTTTTTTCAGCATATGAAGGAATATCAATATGCTATTGACAATGAA
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55 CGGCATACAGGGCGGCGCGGTGTTGAGCAATACGATATCGCGCGCAGCCCCTTCTCTTC
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20 GATGCCCGAGGCACACGCCATAATCGGCAGCCGGCCGGCGAAATGGCGCATCGCCGCCA
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25 TACCCCATCCATACCCTCTTATATCTTAGCGTGCCCGATGCGCCCTCGTGAACCTGGCG
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 30>:

gnm_30

30 CAAATCAGAGCCAGATACGCTTTCATAACAAATCTCCAATCGATAAAATAATATTCGGTT
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40 CTGAAAATGCGGGTGCAGGTTGGCAGGCAGCAGTTTTTTCACGGCGGCATCCAACCGCG
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50 TTCCCCAAAATCCCTAAATCCCAACAGACATTTAGGGGATTTCCATGAGCACCTTC
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TTGGATCAGGTAATTGATTGGCAACCGATCGAACAGTACCTGAACCGTCAAAGAACCCGT
TACCTTCGAGACCACCGCGGCCGTCCGCCTATCCCTGCTGTCCATGTTCAAAGCCGTC
CTGCTCGGACAATGGCACAGCCTTCCGATCCCGAACTCGAACACAGCCTCATACCCGC
ATCGATTTCAACCTGTTTTGCCGTTTTCGCAACTGAGCATCCCCGATTACAGCACCTTA
55 TGCCGCTACCGCAACTGGCTGGCGCAAGACGACACCCTGTCCGAATGTTGGAAGTATT
AACTGCCAACTGACCGAAAAAGGCTTAAAGTAGAGAAAGCATCCGCCGCCGTGTTGAT
GCCACCATTATTCAGACCGCTGGCAGCAACAGCGTCAGGCCATAGAAGTCGATGAAGAA

GGACAAGTCAGCGGCCAAACACACCGAGTAAGGACAGCGATGCCCGTTGGATCAAGAAA
AACGGCCTCTACAACTCGGTTACAAACAACATACCCGTACCGATGCGGAAGGCTATATC
GAGAACTGCACATTACCCCGCCAATGCCATGAGTGCAAACACCTGTCGCCGTTGTTG
5 GAAGGTTTACCCGAAGGTACGACCGTCTATGCCGACAAAGGCTATGACAGTGCAGAAAAC
CGGCAACATCTGGAAGAACATCAGTTGCAGGACGGCATTATGCGCAAAGCCTGCCGCAAC
CGCCCGCTGTCGGAAGTGCAAACCAAGCGTAACCGATATTTATCGAAGACCCGTTATGTG
GTCGAACAAAGCTTCGGTACGCTGCACCGTAAATTCCGCTACGCCCGGGCAGCCTATTTT
GGACTGATTAAAGTGAGTGTGCAAAGCCATCTGAAGGCGATGTGTTTGAACCTGTTGAAA
10 GCCGCCAACAGGCTAAGTGCGCCTGTTGCCGCTAAAGGCGAGCAGCGATGCCTGATTAT
CGGGTATCCGGGGAGGATTAAGGGGGCGTTTGGGTAGAATTAGGAGATATTTGGGGCGAA
AACAGCCGAAAACCTGTGTTTGGGTTTCCGCTGTCCGGAGGGAAAGGAATTTTGCAAAGG
TCTCATCCTGTTATTTTACAAAAACAGAAAACCAAAACAGCAACCTGAAATTCGTCAT
TCCCACGAAAGTGGGAATCCAGTGCCTGAGTTTTCAGCTATTTAGAATAAATTTGAAAC
TCTAATCGCGTCATTCCACGAAAGTGGGAATCCAGGACGCAAAATCTCAAGAAACCGTT
15 TTACCCGATAAGTTTCCGACCGACAACCTCTAGATTCTCGCCTGCGCGGGAATGACGAAT
CCATCCATACGGAAACCTGCATCCCGTCATTCCACGAACTGCATCCCGTCATTCCAC
GAAAGTGGGAATCCAGTTTTTTGAGTTTCAGTCATTCCCGATAAATTGCCTTAGCATTGA
ATGTCTAGATTCCCGCTGCGCGGGAATGACGGGATTGAGATTGCGGCATTATCAGGA
20 GCACAGAAGCCGCTCTGCCGTCACTCCACGAAAGTGGGAATCCAGTTTTTTGAGTTTC
AGTCATTCCCGATAAATTGCCTTAGCATTGAATGTCTAGATTCCCGCTGCGCGGGAATG
ACGAATCCATCCATACGGAAACCTGCACACGTCATTCCACGAACCTACATTCCGTCAT
TCCCACGAAAGTGGGAATCCAGTTTTTTGAGTTTCAGTCATTCCCGATAAATTGCCTTAG
CATGAAATGTCTAGATTCCCGCTGCGCGGGAATGACGAATCCATCCGTACGGAAACCTG
25 CATCCCGTCATTCCACGAACCTACATTCCGTCATTCCACGAAAGTGGGAATCCAGTTT
TTTGAAGTTTCAGTCATTCCGATAAATTGCCTTAGCATTGAATGTCTAGATTCCCGCTG
CGCGGGAATGACGAATCCATCCGTACGAAAACCTGCACACGTCATTCCACGAAAGTGG
GAATCCAGTTGCTTGAGTTTCAGTCATTCCGATAAATTGCCTTAGCATTGAATGTCTAG
ATTTCCCGCTGCGCGGGAATGACGAATTCATCCGTACGGAAACCTGCACACGTCATTCC
30 CACGAACCTACATTCCGTCATTCCACGAAAGTGGGAATCCAGTGCCTTGAGTTTCAGTC
ATTTCCAATAAATTGCCTTAGTATTGAATGTCTGATTCCCGCTGCGCGGGAATGACGA
ATTCATCCGTACGGAAACCTGCATCCCGTCATTCCACGAAAGTGGGAATCCAGTTTTTT
GAGTTTCAGTCATTCCCGATAAATTGCCTTAGCATTGAATGTCTAGATTCCCGCTGCGC
GGGAATGACGGCGGAATCTTGTTTATATTGAATCAAAAAAACCCTGCACCTTAATCAGT
35 TGGCGGTTTAGTCCGACTTTTGGGGTGAGATCAAGCTTTCAGACGGTATTTCTTTAAA
ACTTCATTTTCGAGCGGAGACTGAAGTTCTGCCCCGGTGCAGCATACCTTCCATAGTTGC
TGTCGCGCGCGTGCCTGTTTCCCGTGCCTTCCGCAAGGATTCCCAAGTAA
CGTAGCGGTAGTTGCCGATATTGTAGATAGCCGCCCTCAAGGTGAGCCGTTTTTTCAGAT
TCAGATAGGCGGAACGCTCTGCCGTGACCAAGAAGACGACGCTCTTTTGTGCAATATC
GTTTTTGATCGCCTGCCAGATAAGCAAGCTCGTCAGGGTTTTTCCCTTTGGAATAGGTCA
40 GCATAATGTTTGGCGCCCATTTCCCTCAGGCTGGTCTATCCGAACCCCAACATAAC
GCGACGGCTGTACCGCATCCAAGCATAGCTGCGGAGGGACAGTCCCGCGCGGTTGGATA
CCGATTTCCGTTTGATGCGGTTGTACGCCAATGTGGTGTACAAACCTTCGGGCAGTTTGC
CATAACGCGCTTCCAGTCGATTTTTCCCAATATATTAAAGCGCTTGAAGCGACATATTT
GGGCATTGTAATAATCCGCTATATCAATCTCTGTCAATTGTCTGCTGCTGATTCCGGCAAT
45 TGGTTTTGTGATCGGCAACGGCAATCATATCGGTATAACGGTTGCGGAAGCTGCTGATT
CCAAAAGCCGAAATCGCCCTTCCACTGCAAACCGATTCCCGGTTGGCTGCCTTTTCCG
ATTTAGGGCGGGACGCTGCCAGCCTTTCGATAATCGTGATAAATGTCTATCCCGAAAA
GTTCTTGGAATGAGGGCGTTCTGAAGCCGCTGGAGGCACGGTAAGACACGGAAAAATGCC
GGTTCGGTTTGAACAAGATGCCGCTGTTCCACGAACGGTCAACATACCGCCGCTGCGGA
50 CGAGTTCTTCGACGTGGTGAAGTTTTTCCGGTCTACCTGCCGCCCAAGCTGAAATCGA
AATATTTGCCGATTGAAAAACGGTCTTCAAAGAAATATGGATATTGCTGCCGTTGATTT
TTCTTGGCACGCATTTCGGGAACGCAGGGTTTCGATGTAGCCGACAGACCCCTTCGA
CGACTTCGGGCTTACCCAAAAGATACTTATCTTGATTGTTTTCATCGAATCCCGTGGATT
CCGAAATCCTTGCCGCAATGTGGGAAAGCTGTTTCGGGGCGGGAATCGCTTTGGAAGCAT
55 CGTAACCGGAAGCCCAAGTCAGATGGTGTTCGTCCATTGTTTTTCAGCGATTTCTCAA
ACGAGGCATTCAAAACATTGTGCTGTTCCGGTAGTGGAAACGGTCCGCTGCTGTCTAGG
AATACGGTTTGTCCGCCGACGCGCGGAGGATTGTCCACAGCAGGATACACGGCGCAAT

TCAGCTTCAGCGTGTGTTATCGGTTGCCACGCCCTGTTTGTCAAACGACAACACCGCCT
TATCCGCCCAATTGTGAGAAATACGCTTCGTTTTTCATAACGATACAGCAAACCCATACGGC
GGCGGCGGTGATGTTTCGTCAATAAATTTGGTGCGGGAATATTTCAAACCTATGCCCTGA
5 CCAAATTTTTATCGCCCTTCCACTCTTCTATATTCGGCACAAATACAAGCCGTGCGGGA
AATCGTCCGCGTCGTACACCCCGCTCTGTCTCTAAACTTTTCCGCTCGTCCGTACCGT
AATACTGTTTTTCCGTATATCGCGGATATCGTAACGCTGTTTGGTATCCTCAAACACGC
CGCCGACATAATGCTGCGGCCGAAGCGGTAGCCAGCTTGGCAAGCCAAGAGCCGCTGC
GGTAATCCATCGGATCGGGCAATATCCTGCGCGCGCCGTGTAAGCTTGGGCGGACAGAT
10 TTTCTGCGCGCGCTGCGCCTCCCGCACCTGCGCCTCTTCTTCAGCACTTAAAGGCTGAT
TTTGTTCAATACGTTCTTTTACCCAGCGGTTGAGCTGGTTGTTCAAATATTTCCCGTAGC
CCGCCAATTTTGCACGGGCTTGATTACGCTCGCCCTCTACTGAGAAAATGGCTCTC
TTGTCTTGCCTTAATATCGTATGTCTGACGGAACGCGTCCAACGGTCTATGCCGTATT
CCACCCCGTCCGCAATATCGCCGTGCGGGCGCGTTTCCCGCCCTTGGCGTTCGGTTCGGA
TTAACAGCCCTTCCCAACCGTCTTGTCTGAACCCGCGCCGAGCGACTTCATAAATTGGC
15 GGTTTTTACTGCGTAGGCGGTTTTTGCCTGTATCCCCAACTTTTCCGCTCTGAAATCA
GGTCTGCGCGCTTTTGGTGCGGAAGGCGACCGCGCGCGAGTGC CGCGCTGCGGTGAT
CGGACGAACCGGCACCTTTGTGATTTCCACCGTGTGATGTTTCATATTGATTTTCGT
TGATTGCACCGCTGCCGCCGCGTCCGCCGTATCCGCTCAACGATCCCTGCACGGTAAACG
CCTGTATTTGGGCAACACCGTCGACCGAAACGCCACACGGTTTTTATCCACGCCGCGTA
20 TCGAGTAGCCGCCGTGCGCGCTTGCCTGTTTCGACAACCGCCACGCCCGGATCGTAGC
GCGTCAGGTGCGGGATACCGAGTACCTGTTCTTTGTTCAACGTTTCCGACGTTTTGACGA
TTTTGCCCAAACCGTGCCTCTTTTCGATCGCCGTCCCACTTTGGCGGCACGGACGGTAA
TCTCTTTTCAGGGATTGGGTCTGCGCGGCATCAGGTGTGCCCCCCCCCGCTTGGGCAGCAT
AAGCCGGAAAAGCGGTTGCAATGGCCAAGGCAGTCAGAGTCAGCGGAAAACCGTGTTCCT
25 TATTCATTTTTCCACCTCCTGCATATCTTCTTCGCACCGAATACCACGCCGAATTGGTG
TTTAACTTCAGATTCTAACTGTTTGCCAACATCAACTTCAGCATCAACTTCAGCTTCAAC
ATCAACTTTATTTTCCAGTTTTCAGTTTATACCAAGAGATTTCCCATCATTATTGAAAT
AATACCGCCCAATTCCTCCGCTGCGGGCCGTAATCCCCCTTCTACACGAAGATTACT
AGCTTGAAGGTTTTTGGGGTGGTTCGAACCATTTCCCGAAAGATTGATGCCGTCTCCCG
30 AGTGCCTGCTGTGCGGTAGAAACCGTTGCCCTCAATCTTGCCGTTTTCAATATGGAAAGC
AGGTTCTACACCGTTTTCTCCGTACGCGTTCCGGAATCGATTTCTTGCCGAAATCAAC
GGTAAATACTGCTTTTGGCGCTTCTTTATCCGCTGATTGTCCCATGAAATGGGTTTGCC
GATACGCGCTTCCCAAGTGCCGGTATAGTGTGCTTCTCCAGTTTTTCGGAATATCCGTTTC
CGCCGTGCGGATACCTTTCAGGAAAAGGTCGATGTTCTGCTTTAGGGGCTTCCGGAGC
35 GGGCAGGATGCCGTCTGAACCGCTGCCGCTTCTTCTGTCGGCGATTCTTCTCGGGTTC
TTCAGCTTCATCTTCACCTTCTACGGCTTCGTCTTCTCGCTGCCTTCGTCTTTACGGC
TGCGTCTTCGGTGCCTTCTTCATCGTCGATTTCTGCTTCGCTTCTTCGACGCTATCAAC
GCCTGTATCCTCTTCGTCCCTCTCTTCGTCTGCGCCTTCGTTTGGCGGCGGGACGTTT
GGTTTGATCCGTCGGATTTTACATAGGTCAGAAAATCGCAGCAGGTTCCGATTGTGCT
40 TTTCTTACCATCGGCAAGCTCGATGGTTTGTCTTTGTTTACCAAAGGAATTCACGCCC
TTCGACAAGAAGTTTGTGCGGATGACCAAAATCGGGCATAGAGGAAATGGCAAACCTCAG
GGGATTTTTATCACTTGCCTCGTCAACGGAAATTTTCAGAGAATCCAAGATTTTGGTGTG
TTTTCCAGACGACAGGGCAGGTTTTGTATCTGCTGCGTTTTCTGTCTCTGTTTTTGT
GCCTGCGAATACGCCGAATACGCTGTTGTGCTGCTGATAAACCGTCCGGCAAGCTCTTC
45 TCCGTTATCGCCGAAAAACCGCCCTCAAGCCGCTGATCGGCATCGGTATGAAAAACAA
ATATTCTTTATCAGCGTGTGCGTCTTCACCTCGGTGCTAACTTTGGCACTGCCGGTAAA
GCGGTTGCGGTCCAATGTTGCGGTAATGTCGTAATGGTCAGCGGTTTTTGGGCTCATT
TGGATTACTTTTATTTTGCACATACTGATTTTTAATCAGCTTGCCATTACAGGTTTTGTT
ATCAAAATCAACCGTATATTCCGCAGGATGCTTTCCCTGTGCTCGGCATCCCTAGCCTC
50 ATAAGAAGTTGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 31>:

gnm_31

TTTTTGGATAGCGTGCCAAATGCTGCTGAATTTGCTCAACCGAGATGGCAAGCCTTGGCG
ACACCTCAAAGCCTTGTTTTGCCAAGCGGATCGGTGTATCAAATAATTTTCCCAAGGCA
ATACACCGTATCGCTGATGTATTGTCTCCATCAGTTTAGGGATAGCAGGCGTACCCACCG
5 AGCGACCACCGGCCACCGGTTCCATAAAATTTCAATGGTTGACCATCTTTATCCAAAAATA
ATTCCGGCGTCGCACGCATCGGTGCCGTCTCACGCCCATCAAATGTGGTCAATGTTTGG
CGGTATTATCCCAATACACACAAATGCACCACCGCCCAAGCCTGACGACTGTGGCTCTA
CCAGCTTAGTGTCTGTCACCGCCACCATCGCATCTGCAGCGCTACCGCCTTGCTTTA
AGATATCATAGCCAGCTTGTGTTGCTAATGGATTGGCTGACGCTACCATAAAAATCACTTG
10 CAAGACCAGTAAGGTTCTTCGCGTTGCATCGAATTAATCCACATCATCCACCGCTTGTG
CGGTTCCCGTCAATTCTTTGAGTTTAACTTTGCGACCGTACTCCCGAGGCGGTCAAT
TTCACGCGTTAGCTACGCTACCAAGCAATCAGGTTGCCCAACAGCTAATTGACATCGTTT
AGGGCGTGGACTACCAGGGTATCTAATCCTGTTTGCTACCCACGCTTTCGGGCATGAACG
TCAGTGTGTCCAGGAGGCTGCCTTCGCCATCGGTATTCTCCACATCTCTACGCATTT
15 CACTGCTACACGTGGAATTCTACCTCCCTCTGACACACTCGAGTCACCCAGTTCAGAACG
CAGTTCCTCGGGTTGAGCCCGGGGATTTCACATCCTGCTTAAGTAACCGCTGCGCCCGCT
TTACGCCCAGTAATTCGATTAACGCTCGCACCTACGTATTACCGCGGCTGCTGGCAGC
TAGTTAGCCGGTGCTTATTCTTCAGTACCGTCATCAGCCGCTGATATTAGCAACAGCCT
TTTCTTCCCTGACAAAAGTCCCTTACAACCCGAAGCCTTCTTCAGACACGCGCATGGC
20 TGGATCAGGCTTGCGCCATTGTCCAAAATCCCCACTGCTGCCTCCCGTAGGAGTCTGG
GCCGTGTCTCAGTCCAGTGTGGCGGATCATCCTCTCAGACCCGCTACTGATCGTCGCCT
TGGTAGGCCTTTACCCACCAACTAGCTAATCAGATATCGGCCGCTCGAATAGCGCAAGG
CCCGAAGGTCCCTGCTTTCTCTCTCAAGACGTATGCGGTATTAGCTGATCTTTCGATCA
GTTATCCCCACTACTCGGTACGTTCCGATATGTTACTCACCGGTCGCCACTCGCCACC
25 CGAGAAGCAAGCTTCTGTGCTGCCGTCGACTTGCATGTGTAAAGCATGCCGCCAGCG
TTCAATCTGAGCCAGGATCAAACTCTTATGTTCAATCTCTAACTTTTAACTTCTGGTCT
GCTTCAAAGAAACCAACAGGACAATGTTCAAACATTATCTTGTCTGTCTTCAAACAGT
GTGAGACTCAAGGCACTCACACTTATCGGTAATCTGTTATGTTAAAGAGCGTTGCGAATT
ATAAAGTATTCCTTCCGCTGTCAAGATATCTCTCGATATCCCCAACATTCTGTGCTATA
30 CTTTTAGTTCGTCCGCCACTTCTGCAGCAGCGAAGAACCGAATATACGCCACAGGGA
AAAACGGTCAATGCTTTTCAGCGGGATTTTTTGGGGAAATTCGTCATGTGCTGTCCGAT
AAGGTTTTTTTCTGCTAAATCTGCGCGCCTCCAACAATCCTTCTCTCCCTCCT
CCGGCTGGTGCCCTTTGTGAATATGCTGTCTGAAACTCGGGGACTCAGACGGCATCTGT
TGGCTCTTCTTATCTTTTTCAGAAATGATTTCCAATACGAACTTGCTGCCCATATAGGCAAT
35 CATAAGGCTGACAAATCCGATGATGGTCCACACGGCGGCTTTTTTGC CGCGCCATGCGGT
CATGCTGTGCTTGAGCAGCAGTCCGCCGTAAATCAGCCATGACAATATGCCGAATACGGT
TTTATGGGTAAAGGTATGGGTTTGCCGAATACGGCTTCGGCAAAAAATGTTCCACTGAC
GACGGAATAGGTACGAGGATGAAOCTGCCACATGGCCTGGAACATGAGTTTTTCCAA
ACTGAGCAGCGACGGCAGGAATCCTGCGAGCTTGGAGAAGCTCTGCGGTGCAGGCTCCG
40 ATTACGAGCAGCGGTCAAAACGGACAATAATGTTGCGATGCCGAACAGCCCGTATGCGAG
CAGCGAAGTTCGATATGCAGCATAAAGGGAAGGTGCGTAATTTTCATATCCCGAGAATTT
TCCAGGAAAAACCAACCTGACAGCAGCATCAGTGCGGCGCAAGGATACAGCAGCAACTG
CACTCCGCGCAGCGGATAAAAGAAGCTGCCGGCAAAATAAATAAACAGCATCATCCAAAC
AATCAGGCTGCCGGAATACCCGAAGCCCATATGATGATTTTGTCTTGAATGACCGGCAT
45 AAGCAGTGCCGCGCGCTGGACGGTCAATGCCGCACCCAAAACCGGCAATTCCGTCTTCCA
CGGGTAATCCCGGCCGCCACCCCTGCTGTTGGCAGTGCCATGCAATGCACCCAATCTCTG
GTAAACCGCGCTCAAAAAGATGAAAACCTGTCGGCATGGTGGACTTCTCTATCTATACTG
TTGCGCCGTATGCGGCCGCTTATGAAATATTGGAACTTTTAACGTTGGAATTGTAAATC
CCCATTTCCGTCAGCCTTGACGGATTTGCCGATATGCTGTCCGGCACACAAGCCGCATC
50 AAATTATTTTGAATTTTATTTAACAAGAATGCCCTGATGGGGCAAGCTATTCTTATTC
AGACCAAGGACAGTATGTTAGACAATTTAACCGGCCGCTTCAGCAATGTCTTCAAAAAC
ATCCGGGGGCGAGGCCAACTGACCGAAGACAATATTAAAGAGGCCTTGCGCGAAGTCCGC
CTCGCCCTGCTTGAGGCGGATGTCGCCCTGCCTGTCTGCTCAAGAGTTTCAACAACGTC
AAAGAAAAGGCCCTCGGTGAGGAGTAGCGGGCAGCCTGACGCCGATCAGGCATTTATC
55 GCGGTGGTCAACAAAGCCCTGACCGAAGTATGGGCAGGGAACAAACGCTGGATTG
TCGGTTGCGCCGCCCGCGCTCGTGTGATGGCAGGTTTGCAGGGCGCAGGCAAGACGACG

ACCGTCGGCAAACCTCGCCCGCCTGTTGAAAAACGATCAGAAGAAAAAGGTTTTGGTGGTA
TCCGCGCAGCTTTTACCGTCCTGCCGCGATTGAACAGCTGCGTCTGTTGGCCGAACAGGTC
GGCGTGGATTTTTTCCCGTCCGATACCAACCAAAAACCGGTTGAAATTGCAACTGCCGCC
5 GTCGATTACGCCAAAAACATTTTTACGATGTATTGATGGTCGATACCGCCGCGCGTTTG
GCAATCGATGAAGAGATGATGAACGAAATCAAAGCCCTTCACGCGCGGTTAACCCGGTG
GAAACTTTGTTTCGTCATCGATGCGATGCTGGGTGAGGATGCGGTGAACACTGCTCAGGCA
TTTAATGAAGCCCTGCCGCTGACCGGAGTCGTATTGACCAAGATGGACGGCGACTCGCGC
GGCGGTGCGGCATTGTCCTGACGCCAGTAACCGGCAAACCGATTAAATTTATCGGTGTC
10 GCGGAAAAAATCAACGGCCTCGAACCTTTCCACCCGACCGTCTTGCCGCGCGCATTTTG
GGTATGGCGCAGTATTGACCCCTGATTGAAGACGTTCAAAAAGGTATAGACGAAGAAGCC
CCCGCTAAAAATGGCGAAAAAGCTGCACAAAGGCAAAGGCTTCGACCTCAACGACTTTAAA
GAACAAATCCAGCAAATGCGCAATATGGGCGGTTTGGAAAACCTGATGTCGAAAATGCCG
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15 AAAGTAGAAGCCATCATCAACTCGATGACCCCTAAAGAACGCGCAACCCCTGCCCTGCTC
AAAGCCAGCCGCAAACGCCGTATTGCAATGGGTGCGGGCACAACCGTGCAGGAAGTGAAC
AAATTGCTCAAACAGTTTGAACAAATGCAACAAATGATGAAGATGTTGAGCGGCAACGGC
TTGGGCAAACTGATGCGTATGGCGAAAGGAATGAGGGGGATAAAAGGGATGTTCCCGGGT
TTGTAAGCCGATTTAACAGAAAACGCCGTCTGAAATTTGAGACGGCGTTTTGTTTTATA
20 TTCTGATTTATAGTGGATTAACAAAAATCAGGACAAGGCGCGAGCCGACAGCAGTACAG
ATAGTACGGAACCGATTCACTTGGTGCTTCAGCACCTTAGAGAATCGTTCTCTTTGAGCT
AAGGCGAGCCAAACGCCGTACTGGTTTTGTTAATCCGCTATATATTCTGATTAAAAACCA
TAAGGCTTTAAGCAATCATCTCTTATAAAGCCTAAATACAAAAGCCGTCTGAAATCC
TATTTTCAGATGGCCTTTACTCATTCAATCCTCAACTTATTGCGGCTTTTTCTGCTCTTC
25 GCGTACTTTTATCCCAACTGGTCAATCGTGGTCATACCGGACTGCCAGTCTTTAAATTC
AACTTGGTATTTGCCGCCGACAATCACAGTCGGTGTGCCGCTGATTTGGAATTTATTGGT
CAACTCTTCCATTTGAGCCGCACGCGCTTGGCTTTCAGGAGCCTCAAATGCAGCCAATAC
TTTTTTGCCGTCAAACGCTGTTTGCTCGGACAGCCATTTTTTCAGGGTATCGGTATCGGC
CAGATTGATTTTTTGATTAACCATCGCATCGAAAATATGGCTGTGGCTTTATCTGATTC
ACCGGCCATTTCCACTGCGGCCGCAAACGTGCCAAAGGTTTCATTTATCACCCACAC
30 GACATGCTCCCGGCCATATAGGTATCGTCTTTAAACGTTTTGATGTGCTCGCTCAAGAC
CGGCTCAAGATGGCGCAATGCGGGCAGAAGTAGCCGAAAAATCCAATACTTCGATTTT
ACCGGCCTGCTGTTGCGGAATAGGCGTAGACAATACAGTGTAGTTCACACCTTCGTTCAA
CTCAGCAGGGGCTGCCGGAGCAGATGAGCTGCTTTGGGCGCTGTCTGCCGAACACTGGT
TTCAGCCTGTTTGCTACAAGCGGCCAATGCCAACAGGGTCAATGAAGTCAAAGCTAAGGT
35 TTTGAGGCGTGTTGATTTGAGTGAAGAAATGTGTTAGTTTTATTTCAGCCTTTGCCTG
ATTTATCAGAAACGGTAATTTACCCGGGCAGTATAGCCGCGCGGATTACCCGGCATAGA
GTCCGAACGCCAATATTTTTGATTGAGCAGATTGGCTGCGGCAAAGGTAACGTTAACATT
TTTATGGTTCAGCCAAGCATGGCATCAACTCGGGCAAAGCCTGGAAGCGTAGTCACTTC
40 TTTATTTCTTGAGTTGTAACCGTAGCGTTTGCTGTACCGGTTACGCCGATTTCCCGGTA
GAGGTTTTCGGTGCGGGTATAACGGAAAAACAGGTTGCCGGTAACGTTGCTGGTATTATT
CAAATGGATGCCCACTCGGTGCGGATTTCTTTGCTTCAACGACTTTCGCTGCATCAC
GCCCAACGAACCGCGCAGATAGAGTTTTTTGGGGATGATTGCCCGATGGCGGACAATTC
45 CACGCCGCGCGAACGGTGTGTTGCCGCTAACCGCATAAATATAAGGGTTGTTTTTGGATC
GGGGCGGTAGCGGATATTGAAGCGTTCGATTTGGTAGGCAGACAACGTAGTGTGAGGCG
GTCGTCAGCCAACCTGCTTTTACGCCGCTTTCGTATTGCGGGGTGACTCGGGGTGCGC
GTTGAACACGGCGGAAGACAACGTATCGATGCTCAAATAGCCGCGCGTCCGCCATAAGG
CGCGAAGCCTTTGTTATACGAGGCGTAAGTGTGTGGACGGGATTGATGTTCCACACTGC
GCCGATGTTGGGGCTGAACGAGTGTCCGCTGATTGGCGGCTGCTGCCGGTGAGTTTGT
50 TTCGGAATTAAGGTGTATTGTGTAACGGCCGCGGAGGACGAATTTCAAATCGGGCGT
GGCGGAGAAAGATGTTTTGCAAAAGATGCCGTAGGAGTCGGCTTTGTGGCGGTTTTGGGT
CAGAATAGGCTGCAATCTGCCCGAAGCCGCCAGCTTGCAGCGCTCGTAGGGGTTGATGGA
GGCGGAAAAGGCGCTGCTGAAACCAATGTCCGGTTGCGGTGTTCCGCGCTGTAATCCAT
GCCTACGGTCAGGTGGTTTTCAAACGGCCGATGGTGTAGTCGCCGTTGAGCGTTAAGTT
55 GGACGACAGGTTTTGTTGTCGGTCTGCTGCCAGGCGTAGTTACGTTTGATTAAGTTGCC
ATTTTCGCTGCTGCATAGAAATGATCAAAATCCTGCCCGCCGTGCGGTGGGCGAGCTG
CCATTGGGCACGCCATTTGTCGTTGAAGGCTATTCAAGTCCGAACGCCAACTTGCAG

-358-

CTTGTCTTTGACAAAATCGTTCCGGTGGGCGAACCCCATGCGGTAAGGCAGTCCGAAGCG
 GTCGTACACGGACTTGGTCGACTGCGGTGCGGCGTCCACATTGTCGTAGGTGTA
 TTGCCCCGTCCACTTCAAGCCGTTGTCGAGTTTACCGTAATGCTGGGCGAAACCATGAC
 5 ATTTTGTCTGTCTATGCCGTGCGGAACGAATTGGCGCGCCCGACTTCGCCGGTGAGACG
 GATGGCGACGTTTTTGTTCAGCACTTCGTTAATGTCATATTAGGCTGCGGTTTGCCCA
 TGAGCCGTAAACCGCTCCGATGTTGCGGCTTTGTTGAAGTTGGCGTATTGCTGACCAT
 GTTGATGACGCCGCCGCGTGGTGGCGCGTAAGCACGGAAGACGGGCTTTCAGGAT
 TTCCACGCGCTCGATGTTGGCAGTACTGCGGCGCACTTGTCCGCTTTCGCGCACGCCGTC
 10 GCGGTAAATATCGGATGCGTCCGCTTGAACACCGCGCAGGAAAATGCTTTCACCGCGCAT
 ATCGTAGGCAGCGTCGATGCCGGCATTGCCTTCGAGGATGGAACCTCAATCGTTCGTACC
 GTAATTTTTGTTTTCTGGATATTGAGCGTATCGATGGTTGCGGCGTTTCTTTGATGAG
 CTGTCCGTTGCGGGTAACGGCGGCTTCGTGCTAGTTGATGTAGCCTTTCAGTACGCTGGT
 GTCGGAATGTCCGACCACGGAACCGTGGGCAGAGTGGCGGTGTAATGTTACCATTTGTC
 CTGCGTATCGGCGGCAGCAACAGGGAAGGAAGCAATAATCAGCGTGGGTAATAAAGCTAA
 15 ATGAAATGATATTTTCAATTTTATACTCAATTTAACAAAACAACCGAATTATATTGCCTC
 ACGGAGGAAATGAGAATAATTTCTTTAACTATATTGAACATGATATTGTAACAAAGG
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 ACGGCATTTTTTTGACCGCGAAATTATGCGCCGAACACTTTCAAACGTTCTGCAACGGGT
 TCAAAGGTCTTTTACCTGCGGCCCTTCAATACCGCCGATAACCATTTGTGCGCGCAAC
 20 AACCAGTTTTTCGGGGATATTCCACGCTTTGGCAATCGCCGCATCGGGCAAGGGATTGTAA
 TGTTGCAGGTTTGCACCTACGCCGACCGCGGCAAGTGTGCTCCAAACGGCATACTGCACC
 ATCGCGTTTGCTGTATCCGCCAAACGGGGAAGTTAGCGGCATAAGCAGGGAACGTCTCC
 TGCAAACTTTTGACGACATTTTGATCTTCATAAAACAAATGGTTGCGCGACCCGCTTA
 AACAGGTTCAATTTTTGCGCGGTCGGTTCAAACCTGTGCGCAGGCACGACGGCAGCAGC
 25 GcGTCTTCGACAAATTGCCACACCTTATCATGCTCTTCGCCAAACAGCAGCACGCGG
 GCAGATTGGGAATTGAACGAAGAAGGTGTGTGCAAAACGGCGTGTTCGACGATTTGGACA
 ACTTCATCTTTGCCGACGGGCAGATTTTTATTTAACGAATAAnTGAACGGCGGCTTTCG
 GCAGCCTGTTGCAGAGATTGACGGGTC

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 32>:

gnm_32

CAGCGCGCCGCCCTCGGCATTCCCGCCCTCCCTTTGAACGCGCAGCAAACCGCCGATTTG
 GTTGAGCTGCTGAAAAGCCCGCCCGCAGGCGAAGGCGAGTTCTGGTTCGAAGTCTTGGC
 CACCGTGTTCGCCCCGGTGTGGACGATGCCGCCAAAGTCAAAGCCTCATTCTGGCTGCC
 35 GTTGCCGAAGGCAGCGCGTCCAGCCCGTGATCTCCCCGAATATGCGACCGAACTCTTA
 GGTACAAATGCTCGGCGGTTACAATATTACGCCTTAATCGAACTCTTGGACGACGACAAA
 CTCGCGTCCATTGCTGCCAAAGGCTTGAACATACGCTTCTGATGTTTCGATTCTTCCAC
 GACGTTCAAGAAAAGCCGAAAAGGCAACAAATACGCGCAAGAAGTTTTGCAATCTTGG
 GCAGATGCCGAATGGTTTCGCCTCAGCGCCAAAGTTCCCGAAAAAATCACCGTTACCGTT
 40 TTCAAAGTTGACGGCGAAACCAATACAGACGACCTCTCCCCCGCGCCGACGCGTGGAGT
 CGTCCCGATATTCCGCTGCACGCGCTGGCCATGCTGAAAACCCGCGCGACGGCATCACG
 CCCGACAAACCGGGCGAAGTCGGTCCGATTAATTTGTTGGAAGAACTCAAAGCCAAAGGC
 CATCCGTTGCTTACGTCGGCGACGTGGTCCGTTCTTACGCAAATCCGCGACC
 AACTCCGTCAATTTGGCATACCGCGGAAGACATTCCGTTCTGCGGAACAAACGCTTCGGC
 45 GCGGTATGTTGGGCGGCAAAATCGCGCCGATTTTCTTCAATACCCAAGAAGATTCCGGC
 GCGCTGCCGATTGAAGTCGATGTATCTGCTCTAAAAATGGGCGATGTCGTCGATATCCTG
 CCTTATGAAGGCAAAATCGTGAAAACGGCGAGACTGTTGCCGAGTTTGAATTGAAATCA
 CAAGTATTGCTGGACGAAGTGCAAGCCGGCGCCGTATCAACCTGATTATCGGCCGAGGT
 CTGACCGCCAAAGCGCGCGAAGCCCTGAAACTGCCTGCCTCTACTGCATTCCGCCCTGCCG
 50 CAAGCGCCTGCCGAAAGCAAAGCCGTTTACCTTGGCGCAAAAAATGGTCGGCCGCGCC
 TGCGGTCTGCCGAAAGCAAGGCGTGGCCCGGGTACTTACTGCGAACCAGCGTATGACG
 ACGGTGCGGCTCGCAAGACACGACCGGCCGATGACCGCGACGAGTTGAAAGACTTGGCT
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5 AAACCTGTCGATGTAAAAACCCATAAAGAACTGCCCGCCTTTATTTCCACCCGTGGCGGC
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 33>:

gnm_33

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20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 34>:

gmm_34

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GAATTCGTTGACCTGTTTGAAGTTGGTATCGGTTTTTCCAACAAGGCTTGTGTTTTGG
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40 GAAAATGGGCGGCGAAACGCATTGTGCTGTGATGAGGGCGGCGATGACGCGCGCGCAGG
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50 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 35>:

gnm_35

CCGGATTTGGTGCGAAAAATTTGCATTCCGCCGAAAATTTGGTTTCAGACGGCATTCAA
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5 ATGCCGCTGACGGCAATTTGTGCTCAGAACCGTCGTTGTTTTTAATAATGCGCCGTTT
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15 CCGCGGGGCGCGCAACCCAAAATAATCAGTTTGGCGGTGTTGGGACATTGTTTTCTTTG
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25 CGTGGGCGAGCATTAAAGGGCGGACTGGCGAATATGGACGTGCTGGTTACCATCGGCACGG
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-391-

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50

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 36>:

gum_36

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 37>:

gnm_37

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APPENDIX D

The following DNA sequence was identified in *N. meningitidis B* <SEQ ID NO. 1068>:

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AAGACAACGGCCAGCGCGTGCTTGCCGATGCCGTCAAAGGCAAAGACATCTTCTTGGGCC
TCTCCGGCGCGAACCTGCTGACGCTGAAATACGAAACCATGAACGAAAAACCCATCG
15 TGTTTCGCTATGGCCAAACCCGAATCCGGAAATCCTGCCGCCGCTGGCGAAAGAAACCCGTC
CGGACGTGGTTATCGGTACCGGCCGCTCCGACTTCCCGAACCAAGTGAACAATGTATTGT
GCTTCCCGTTTCTTCCGCGGTGCGTTGGATGTGCGCGCGACGACCATCAACGAAGAAA
TGAAACGCGCCTGCGTGTATGCTTTGGCGGATTGGCGATGGAAGAAGTAACGAAGAG
TGTTTGGCGCTTACGGTAAGAAATTTGAATTGGCGCGGAATACCTGATTCCGACTCCGT
TCGATTCCCGCCTGCTGCCGCGGTTGCTACGGCTGCCGCCAAAGCAGCGATGGAAGCG
20 GTGTGGCAACCCGTCGATTGCGATTGCGAGTTTGAAGCTTACGCTGCCAAGCTGAGCGAATGGA
AGCTGTAAGCCGTTTTCGGGTTTAAATGCGCTCTGAAGTGTTCAGGCGGCATTTTGCT
GTGAGATTGATATAGTGGATTAACAAAAATCAGGACAAAGCGACGAAGCCGACAGTA
CAATAGTACGGAACCGATTCACTTGGTGTTCAGCACCTTAGAGAATCGTTCTCTTTGA
GCTAAGGCGAGGCAACGCCGTAAGTGTTCGTTTGAATCACTATAAATGAAAGATACTGA
25 AAAATGAAAGAGATGAAACCTGTCCGTTATCATATTGGCGATATGCCCGAGACTTCAAAA
CAACCCGCTCCCGTCATGACGACAGGCGAGTGGGTGTTGACGATGATTGTTTTCATGAT
TCCTTTGGTCAATTTTGTGTTGGGTGTTCCGGCAGAGGCAACCCGAACCGCGCAATTTCT
GTAAAGCGCAGTTGCTTTATTTACCTGATTGGTTGCTTATCGGTTTGGTCTTCGCGTTGT
TTATAGGTGGGTCTGTATCAGGTACGCATGATTAATGCCCCGGGCTGATTTGCTTCGAG
30 GATTTGTATCGAATATGCCGAATTGTTTCAAATTTATACCGTTATCGAACGGCATTGGC
AAAAACCTTATCCGGTTTTGTCTTTCTGCTTAAGCCGCTCTCCGGGCTGTTTGCCAAA
TTGCGGCAAAACGGCGGACGGATTTTTATCGGGAACGGCAAAGCGAAAGCTGCCCG
TGCTGTGGTGTGTCGGCAATATTACGCGGGTGGGACGGGAAACGCGGATTGTTG
35 CCGCGCTGGTGTGCGGTTTTCAGGAAAGGGCGTCAAGGTCGGCATCATCAGCCGGGCT
ACGGGCGCAAGAGCAAGGCGGTTTATGATTGAATGCTGAGAGCCGAGCGGAAGATGCGG
GCGATGAGCCTTTGCTGCTGTTCCGCAAAACCGGTGCGCCGACGGCGGTGGGACGAGCC
GTGACAGGACGAGGAGGCGTGTGTCGGCGCGCATCCCGACATCGGACTGATTGTGGCGG
ACGACGGTTTGCAGCATTACGCCCTGCGGCGAGATGTGGAATCGCGGTGTTTCCGGCGG
CGGATACGGGCGCACGGATTGGATTACTGCCCAACGGCAGTTTGGCGCAACCTTTGT
40 TGCGGCTGGATTGCGTGGATGCGGTCGTCAGCGGCGGCAAGGCGGATGCGCTGTTA
GGCCGCTGAAAATATGTTTACAGCCGATCGAAGCGGGACGGATTACCGTTTGAACA
ATCCGTCCGAAATACTGGACACAGGCCGCTGAAAAATCAACCGTCGTCGCCGTGGCAG
GTATTGCCAAGCCGGCGCGGTTTTTGTATTGTTGCGGAATATGGGCATTACCGTGAAGC
GAACCGTCGCGCTGCCCGACACGCCGACATTTCCGCGGCGAGTTGCCCGATGCGGACG
45 CGGTCAATTATTACGGAGAAAGATGCGGTCAAATTTTACAGCGGCATTGACCGGATAATG
TTTGGGTGTTGCCGTTTTGTGCGATAATCGAACCTGATTGGCGGCGTTTGTGTTGGAGC
GGTTGGAAGATGACCGAAGGCCGCTGAAAGCACGGTTTGGGCGGAGTGATTACGGATT
TGAATAAGAACGCCCTCGCGCCATCATTTCCGCGCGAGCGGGAATCTAAGTCTCGAATTT
CAGGAATGCCCTAGAGGCTCCAGAAATCCCAATCTCCGATTTCCTACTGGACAGGAAT
50 GAGAAAACCGGTCGTATTTTTATCTGCATTAATCATTCATTAAAGGATTGAATATTAA
CTGAAAACCTTGTATTGCCCTTCGCCACGCTGGCATGTGCACCAATGCTTTTGCCGCC
CCGCCAGCGACGCGTCGTTGGCGGTTGGCTGGATACGCAATTTTACCGGGATATA
GAAAAAATATGATTGAGGGCTTTATGCCGGATTTAAACCGTATGCGGACAAAGCCCTT
GCCGAAATGCCGGAAGCGAAAAAGATCAGGCGGCAAGCCCTTAACCGTTATCGTGAG
55 AATGTTTTGAAAGATTGATTACGCCCGAAGTGAACAGGCTGTCCGCAATACTTTATTG
AAGAAATGCCCGTGAGATATACACGCAAGAAGAAATTGACGGCATGATTGCTTTTACGGT
TCGCCTGTGCGTCAGTCCGTGTTGCCAAAAATCCGCGCTTAATCAAGAAATCGATGAGT

GAAATAGCGGTATCTTGGACTGCATTGTCAGGGAAAATCGCGCAACATCATCTGCCCGAG
TTTACGGAAGAGTTGCGGCGCATCATCTGCGGCGGTAAAAATCCCGATGCGGGCTGTAAA
CAAGCCGGACAGGTTGGGAAAAGGCATCAGAAATAAATGATAGCCGTCTGAAATATTGAA
5 GAGGGCATCCGATTGATTGAACCATCAAACCCGAAAGCAACCTATGGAAAAAAATTCT
TAGACATCCTCGTCTGCCCCGTTACCAAAGGCAGGCTGGAATATCATCAGGACAAACAGG
AATTGTGGAGCCGTGAGGCGAAGCTTGCCATCCGATTAAAGACGGCATTCCCTATATGC
TGGAAAACGAAGCGGAGCGTTGAGCGAAGAGGAACCTCAAAGCATGACCGAATTCGTCTGT
ATTGATTCGCGCGCGCTGGATTCTGTCTGCGCCTGCCCCGAAAAGCCTTGCGGACATCCA
10 CGGCAAAACCGATGTCGTGCGCGTTGCCGAACAGGCGGCAAAAAGTAAAGCCGCGCGCT
CGTCTGTTGCCACCGACCATCCCGATATTAGACGGCCTGTGAGGCGCACGGTATCGAAGT
CGTCATGACTTCAAACCGGCACGAAAGCGGCACGACGCGCTTGCCGAAGCCTCTGTCTGC
GCTGAAGCTGCGCGCCGATTTGATTGTTGTGAACGTACAGGCTGACGAGCCGCTGATTGC
CCCCGAACTCATCGACCGCACCGCCGAGTACTCGTCAAAAACAACGTCCAAATGGCGAC
CGCCGCCACGAATTGCACGATTTCGACGAATTGATGAATCCCAACGCCGTCAAAGTCGT
15 CCTCGCAAAAACCGCAACGCCATCTACTTCAGCCGCGCCCCGATTCCCTATCCGCGTGA
TGGATACGTGCGGGAACCGCAAAATGCCGTCTGAAACCGCGCTCCTGCGACATATCGG
CATCTACGCTTACCGCGCGGCTTCTGCAACGCTATGCCGAAATGAGCGTTTCGCGCT
GGAAACCATCGAATCGTGGAAACAGCTGCGCGTCTGTGGCACGGTTATCCATTGCCGT
CGAAACCGCCAAAGAAGCCCCCGCGCGGTGTGGATACGCAAGAGGACTTGGACAGGGT
20 TCGCGCGTATTTAGACCGGTATAAACAGGTTCAAAGGAAAAGATATGCAGCAACATA
TTGAAAAGTGGCAACACTTGAGCCGGGAAGAACAGAAAATCCTTGCTGAAGTATGGGGT
TCGTGCAAAACGACGATCAGGAGGTTCACTATGAAATGCTCAAATTGAACGACCCGATG
AAGCCAGCGCGCAATTTTGTTTCAAGATGGCAGAAACACTCAGCACCTGCCGCCAAC
GTTCCCTCGCGCTTAGAATGAACGGCGGAGGCTGGCGACCGCGTATCCATCCTTTCCG
25 TCATGATTGAAGACAATCCCGACATACCGCAGCTTTGGGCGCAAAAATTACCGCGCTCA
ATTATAGTGGATTAAATTTAAACAGTACGCGCTTGCCCTGCGCTTGTCTGATCTATCTGTA
CTGTCTCGGGCTTGTCTGCTTGTCTGATTTTGTAAATCCACTATATTGGCACACGG
GCACAAAGCCCGTGCCGACGGTTTGGCACAAACAGCCGACAAAGCGGCAGAGCCAACGA
GGAGGAATACCTGACCAAGCCCTGTCGCAAAACCTGCTGTCAACATTGGATGTGCGGCT
30 TGCACGTTTCTGTAAGACGCGTGGTTTTCAGGAAATCAAACAGGATGCACAAAAGCATT
TGCTTGAGGATGTGGCAGTCAGGAATATTTCCATTAGGAAGAAAAGAGTGCCTGATTG
GGTATAATCAGGGTAAATCTATTTTATTTCAAAGATTAAATTTGCTTTCTGTTTTTC
CTTGACGGTATCGGAAAAGTTGATTATAGTTACAGCTTCCTTAGGAGTAATGGCTGAGAG
GCTGAAGGCACTTCCCTGCTAAGGAAGCATGTGGGGTCAACCTGCATCGAGGGTTGCAAT
35 CCCTCTTACTCCGCCAGATAAAAAATAGACGCTGTGTTTTACAGCGTCTATTTTTATGC
AATTTTATAGCGGTTGGTGCAAAACAGTATGGTATTGCCCTGTCTTGATTCTGAATTT
TGTTATAGGTGATGAACAAAACAGTACGCGGCTTGCCCTAGCTCAAAGAGAACG
ATTCTCTAAGGTGCTGGAGCACCAAGTGAATCGGCTCCGTACTATTTGTACTGTCTGCGG
CTTCGTGCGCTTGTCTGATTTTGTAAATCCACTATAATCCGAGATGCTTGCCGTTTAT
40 TTCCGCTCGTTCAAACGGCGGCTCTGATTTGCGCGGTTTCTGTTGCCGTATTCGCTA
TCCGTACCGCAAATGTTATACTGGGAAAATTTACTGATTGTGTTTTACGGCATATTTGC
CGATAGGATGGAAGAGACAAATGAGCAGAAATCCGGCAGGCTTTTGCCGCTTTGGATGGCG
GAAAGGCATTGATTGCCTATATTACGGTGGGCGACCCGATATTGCGACAACCTTGCGCAT
TGATGCACGGCATGGTTGCAACCGGTGCGGATATTTTGAGTTGGGTGTGCCGTTTCCG
45 ATCCGATGGCGGATGGGCCGTTATTAGCGGTGCGGCGGAGCGGGCGTTGGCAAACGGGA
TTTCGCTGCGCGATGTCTGGATGTCTGAGAAAATCCGTGAAACCGACACGCAACGC
CGGTTGTTTTGATGGGATATTTGAACCTGTACATAAGATGGGTATCGGGAGTTTGCTC
AGGAAGCCGCAAGGCGGGTGTGGACGGCGTGTGACGGTGGATTCCCTGTGCAACCA
TCGATCCGCTCTATCGCGAGCTGAAGGATAACGGGGTGCAGTGTATTTCTGATTGCGC
50 CGACGACGACGGAAGACCGTATTAACCATTTGCCGAGCTGGCAGGCGGATTGTCTATT
ATGTTTCGCTCAAGGGCGTAACGGGCGGGCAAGTTGGATACGGATGAGGTTTCGCGTA
AAATAGAGTATTTGCATCAGTATATCGATATTCCCATCGGTGTGCGTTTCGGCATCAGCA
ATGCGGAAAGTGCACGCAAAATCGGCCGGGTGCGGACGCAAGTATTGTGCGGACCGGGA
TTGTGAAAGAAATCGAAAACAATACAGGCAACGAGGCTGCCGCCGTGGTGCTTTGGTAA
55 AAGAGTTGAAGGATGCCGTGCGCTGACGGCGGTTCTCATCTGAATATTTTAGGAGTTG
TCCATGAGCTGGTTAGATAAAATCCTGCCACCCAAAATCAAGAATCCGGGAAAAGACGGT
TCTTCCAATGTTCCCGAGGGTCTATGGCACAATGCCCGTCTGTTCGGCAACCGTTTAT

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5 TCTACCGAGTTGCAGCAGAACAATCAGGTTTGTCCGAAATGCAACCACCACAATCCGTTG
TCGGCAGCACACGCCTGAACCTGCTTTTGGATGAGGATGGCAGGAGGAAGTTGCCGGA
AATGTCAAACCGACAGATCCTTTGAAGTTTAAAGACGGCAAAAAATATCCGGATCGTTTG
AGTGCGGCACGCAAGCTGACCGGGGAAGATGATGCTTTGGTGGTGATGAAAGGCAAGATG
AACGGCCTGCCCGTCGTGCTTGTGCGTTTGAAGTCCGCTTTATCGGCGGTTTCGATGGGT
10 TCGGTTGTGGGCGAACGATTTCGTACAAGGTATCCGTCCGGGGGTATGCCGACAATTGTCCG
TTCGTCTGTGTGTCGGCTTCCGTCCGCGCGCGTATGCAGGAGGGTGTAAGTTCGCTGATG
CAGATGACGAAAACAGTGCCGCGCTGCATTGCTGACGAAAAACGCCTGCCATTTATA
TCGGTGTGACCGATCCGACTATGGGCGGCGTATCCGCCAGCTTCGCATTTTGGGCGAT
15 ACGGTGCGCGAAACGCTGCCGGAAGGCTTCCAACGCGCGAGTTCCTGCTGGAAAAAGGC
GCAATCGACCAGATTGTGACCGCGCGCATATGAAGCGGCGCATCAGTGATTTGATTACG
CTGTTGTGCCGTCAGGACAAAGTTTCCGCGCGCTGATGGCTGATGAATCGAGTACCGTCT
GAAACCGATGTTTCAGACGGTATTTTGTGTCTGGTTATTTGTTGTGCGGCTTTATCGAT
GGGGCATAGCGTCCGGCACGTTCTTTCAGGCGTTGTACCAAACCTTTCGTGTGCGCGGGT
ACACCGCCCTCGCAGAATGCCTGATACAGGACGGTGCGCAGTGCGTCTGCGGCTTAAT
GTACCGCCTATCGGTTTCCATTTCGGCGTTTTCGGGGCTGTATCCAGCGCGGTTGACCGTG
20 TCGCCGTAGCCGAACACTTTATAGGAGGAAGGTTTGCCTTGCCGAACCTGATGGAGAAG
CGGGCGCAGAATATGCCTTTGGCAGTCAGGTTGTCGTAGCCTTTGTCGGAGCGGATATTG
AGAATGTAGCGGATGTCGCCGTCCGGCGCGGGCATAATTTGCAGGCTGTCGAGCAGGATT
TTCGGCTGTTTGCCTAATTTTTCATCCACATAAATGTGCAACCAGCCGTCGAGTGCGTA
TCGGGCAGCGGCGGCGAGTTTGGCGGTATGTTCTTTAAATTCGCGGGCGGCGGCCTCTTCG
GGCGTTTTCGCGGTAGCGGTTGTTATCGGCGTGTCTTTTGGCTGAAGCCGGCAGCGAGG
GACGTGCCGCGCGGAGTGCGAGCAGCAGGAGGGCGGTGCGGCGCATAGTTTCTCCAA
25 TTGAAAACGGCGTTATTTTATGGGTTGGCAAAGGGGCTGCAAGCAACTGGGGTATAATC
TCCCCCGATTCCCATTTTAAACGGTACAAACGATGAACAGCGAACTTTAGACGTAA
CCGGATTGAAATGTCCCTGCCGATTTTGCGGGCGATAAAGGCTTTGGCGCAAATGCAGC
ACGGCGACCTG

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 38>:

gnm_38

AGACAACTTTTTGAACAGCATGACGGCAAACCTCGAAAGCATGGACGGGCGGGAACAGGA
GCTGGATTTGATTTGGCGGACAGAAGCCGATATCGGTACGGCAGCATACTGCAATTTGT
35 CTGCAACTGGGGTTTCCCGCCGCCGAAAGACCTGTTCCGTTCTGAAAAAATCGGCG
CGGTACACAGCGCAATGCTGATCCATCGGGCGGCAGACGCATTGGACAAAGAAATCCGCC
GCCTCCAATCGGAAGTAAAAACCTGAAAGAAATGTGGGATATAACATCTCGACAACAAA
ACCGCCTCACTGCTGAACAGTCTGGATGAACAATATTGGCAAGACCCCGACAACTGTAT
CTGCTGGGATGGCAATACTATTCCAGCAACCCTGTTTCAGACGGTGGCGGATTTCGATTTG
AAGTGCAACTTTCCCTAACAGAAAAAGGCCAGTATGCGGTAGCATACGGCCTTTCCTGCA
40 AGAAAGATTGCCATGAGCTACACGCAACTGACCCAAGGCGAACGATACCACATCCAATAC
CTGTCCCGCCACTGCACCGTCACCGAAATCGCCAAACAGCTGAACCGCCACAAAAGCACC
ATCAGCCCGCAATCAGACGGCACCGCACCCAAGGGCAGCAATACAGCGCCGAAAAAGCC
CAGCGGCAAGCCGGACTATCAACAGCGTAAGCGACAACCTATAAGCTCGATTTCGCAG
CTGATTACGACATCGACCCCTTATCCGCCGCAACTCAGTCCCGAACAAGTATGCGCC
45 TACCTGTGCAACACCACAGATCAGCTCCACCACAGCACCATTTACCGCTACCTTCGC
CAAGACAAAGCAACGGCAGCAGTTGTGGCAACATCTCAGAAATATGCAGCAACCCCTAC
CGCAACGCTACGGCAGCACATGGACCAGAGGCAAGTACCCAACCGTGTCCGGCATAGAA
AACCGACCCGCTATCGTCGACCAGAAATCCCGTATCGGCGATTGGGAAGCCGACACCAT
GTCCGCAAGGACATAAAAGC

50

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 39>:

gnm_39

CCGGCAAAACACCGGCGCGTCCCATCGTGCAGAAAAAGGATACGGAAAAGGATAAACGC
CATAACGTGCGGCGTTTGTCTATAATCCGCCCTTCATTACCGCAGCCCGCCGAAAGATGC
CGATGGCAAAACCGCTCAAATACCCCGTTTCCGCACTGGTCGTCTTTATAGCGGGGACG
5 GCGGCATCCTGCTCATCGAACGCACGCATCCGGAAGGATTTTGGCAGTCGGTAACCGGCA
GCCTCGAACCGGGCGAAACCGTCGCCCAAACGGCAAGGCGCGAAGTTTGGGAAGAAACCG
GCATCCTGCTGGCGGACGGGACGCTTCAAGACTGGCAGCAGCAGCAGGTTTACGAAATCT
ACCACCACTGGCGGCACCGCTATCCAAAAGGCGTGTGTTGAAAACCGCGAACACCTCTCT
10 CTGCCGAAATCCGCGTGATACGCCCATCGCCCTGCAACCCGAGAACACGTCTCCTACG
GTTGGTTGATATGGAAGAAGCAGCGGAAAAAGTATTTTCCCGTCCAACAGGCGCGCGA
TTTTGGAACTGGGCGAGTTTGGGCAAAACGGTAACACGCGCCCGTACACCTTTTACAG
GCATCGGGCGCATTTTACGCCGACGTTTGTGCTATACTTTCAAACCTTACACTTTCCCA
AACAAAGGAAACCAAATGGCAGACTTCAACCAAATCCTGACCCCGGCGACGTGGACGGC
GGCATCATCAACGTTGTCAACGAAATCCCGCGCGGACGCAACCAAAATCGAATgGAAC
15 gCAAACCTGgCCGATTCCAACTCGACCGCGTGAACCCGCCATCTTCGCCAAACCGACCA
ACTACGGCTTCATTCCCCAACTTTGGACGAAGACGGCGACGAATTGGACGTGCTGCTCG
TTACCGAACACCTTTGGCAACCGGCGTATTCTTGAAGCGCGGTTATCGGCGTGATGA
AATTCGTTGACGACGGCGAAGTGGACGACAAAATCGTCTGCGTTCTGCGGACGACCGCA
ACAACGGCAACGCCTACAAAACCTTTGTCCGATTGCGCGAACAGCTCATCAAAACAATCG
20 AGTTCCACTTCAACCATTACAAAGACCTGAAAAAGCAGGTACGACCAAAGTCGAATCGT
GGGGCGATGCGGAAGAAGCGAAAAAGTCATCAAGAATCCATCGAACGTTGGAACAAAC
AGGCATAACGCCCGCCATGCCGTCTGAACGCCGTTTACAGCGGCATTTTCCAAGCTCTA
GGGAATACCGTCCCAATCGGCTATAATCCGAACATACCGTTTCCGACCGAACGCCATGAA
CCGCCGAAAAATCTATCTGTTGTCTGTTGCCCTTTCACACTGGCATTTATGCTGCTCGT
25 CCTCTTGGGTGCTTATCTGCTGACCGTCGGCAGCAAAGCCTTCGCCGTGCGCTCCTTTCT
TTTCGCAATTCGGCGCACTGTTCCGACAAATCGGCAGCCTCGCCCTCTACCTGCGGCACAA
ATCCCTACGCGCCGCCAATCCGCCCAAAGGAAAACCGCTATGTCTGAAAAACCGGAAA
AAATCGTTTTGGCAAGCGGCAATGCCGCAAGCTCGAAGAGTTCCGCAACTTATTCAAAC
CTTACAGCATCACCGTATTGCCGCAATCCGCATTCCGCATACCCGAATGCCCCGAACCT
30 ATCCACCTTTGTGCAAAACGCGCTGGCAAAAGCACGCCATGCCGCCAAATACAGCGGGC
TGCCCGCACTCGCCGACGACAGCGGCATCTGTGCCCGCCCTTAAACGGCGCGCCGGGCA
TCCATTCCGCACGTTACGCGGGGCAATCCCAAATCCGATACCGCCAACAACCTGAAAC
TTGCCCGCGAATTTGTGGCAAGGCGACAAAAGCTGCTGCTATGTCTGCGTATTGGTTT
TTGTCCGCCATAAAGACGACCCGCGCCCGATTATCGCCGAGGGCGTATGGCACGGGCGT
35 GGAACGACACGCGCTCGGGCAAACGGTTTCGGTTACGACCCGATTTTATCTGCCCG
AACACGGCAAACCGCCGCGAATTGGATACGGAGGTCAAAAACCGCGAAAGCCACCGCG
CGCAGGCATTGCCGAATCTTACGCAAACTCGCCCTTAAACATCAAAACAATACAAAG
GAAAAAGAATGAAACCCATACGGAAAGCCGTTTTTCCCGTCGCAGGGATGGGAACCGCT
TCCTGCCCGCCACCAAGGCCAGCCCGAAAGAAATGCTGCCCATCGTCGACAAAGCCGCTGA
40 TCCAATACGCCGTAGAAGAAGCCGTGGAAGCCGGTGCACGGAAATGGTGTGTTTACCG
GACGCAACAAACGCAGCATCGAAGACCATTTCGACAAGGCATACGAACTCGAAACCGAGT
TGGAATGCGCCATAAAGACAAATTGTTGGAACACGTCCGCAACATCCTGCCGCCGAACA
TTACCTGCCCTTACATCCGTAGGGCGAAGCACTGGGCTTGGGACACGCCGTCTGTGCG
CCGCGCGCCCATCGGAGACGAACCTTTGCCGTTATCCTTGCCGACGACCTGATTGATG
45 CCCCCAAAGGCGCGCTCAAACAAATGGTCGAAGTGTACGGGCGCAGCGCAACAGCATT
TGGGCGTAGAAACCGTTGAAGCATCGAAACCGGCTCATACGGCATCGTCGAAACCGAAC
AGCTCAAACAGTTCCAACGCATTACCGCATTTGTGAAAAACCCAGCCCGAAGACGCGC
CCTCCAACCTTGCCGTTGTGAGCGCTACATCCTCACCCCGCGCATTTTCGACCTCTTAA
CCAATCTTCCGCGCGGCGCGGGCAACGAAATCCAGCTTACAGACGGCATCGCCAAGCTGC
50 TCGATACGAAATTTGCTCCTGGCGCACCCCTTTGAAGGTACGCGCTACGACTGCGGCAGCA
AACTGGGCTACCTCGAAGCCACCGTCGCTACGGTCTGAAACATCCCGAAACCGGCGAAC
CCTTCCGCGCGCTTTTGGAAAAATACCGCACCGAATAACCCCATCAAGGAATCCTTATGC
ACGACAAAACCTGGTCCGGACGTTTCAACGAACCCGTTTCCGAACCTGTCAAACAATACA
CCGCTCCATCGTTTCGACCGACGGCTTGCCGAATGGGACATCCAAGGCTCGCTGGCAC
55 ACGCGCAAATGCTGAAAGAAACCGGCGTGTGGACGAAGCGATTGGCGGACATCCGCC
GGGTATGGCGGAAATCCTCGAAGAAATCCGCAGCGGCAAAATCGAATGGTCGTCCGATT

TGAAGATGTCCATATGAACATCGAACGCCGCTGACCGACAAAATCGGCGACGCGGGCA
 AACGCCGTGCACACCGGCCGAGCCGCAACGACCAAGTCGCCACCGACATCCGCCGTGTGGC
 TGCCGCGACCAGATTACCGTTATACAAAGCCTGATTCAAAGCCTTCAGACGGCATTGCTGG
 5 ATTTGGCGGAACAAACGCCGAAACCGTCATGCCAGGCTTTACCCACCTGCAAGTCGCCC
 AGCCCGTCAGCTTCGGACACCATATGCTCGCCTACGTCGAAATGCTCGGACGCGATAACG
 AACGGATGCGGACTGCCGCTGCCGCGTCAACCGTATGCCGCTCGGCGCAGCCGCCCTTG
 CCGGGACGACCTACCCGATTAGCGCGGAAATCACCGCCGAGCTATTGGGCTTTGAACAAA
 TCTGCCAGAACTCGCTCGATGCCGTATCCGACCGCGATTTCGCCATTGAGTTCACAGCCG
 CCGCCTCGCTGGTTATGGTTCACCTGAGCCGCTGTCTGAAGAATTGATTTTGTGGATGA
 10 GCCCGCGTTTCGGCTTTATCGACATCGCCGACCGTTTCTGCACAGGTTTCGTCCATCATGC
 CGCAGAAGAAAAACCCCGACGTGCCCGAACTCGTGCGCGGCAATCCGGCCGCGTCATCG
 GACACCTTATCGGTCTGATTACCCTGATGAAATCCCAACCCTTGGCGTACAACAAAGACA
 ATCAGGAAGACAAAGAACCTTGTTCGACACCGCCGACACGCTTATCGACACGTTGCGGA
 TTTACGCCGATATGATGCGCGCGTAACCGTCAAACCCGACAATATGCGCGCCGCCGTGA
 15 TGCAGGGCTTCGCTACCGCCACCGACTTGGCGGATTATCTGGTCAAAAAAGGCATGCCTT
 TCCGCGATGCCACGAAGTCGTGCCCAAGCCGTGCCACGCCGACCAAGCGGGCGTCG
 ATTTGAGCGAACTGCCGCTCGAAGTCTTACAAGGTTTCAGCGATTGATTGCCGACGACG
 TTTACGCCGTGCTGACACCCGAAGGCAGCTTAAACGCCCGCAACCACTTGGGCGGTACCG
 CGCCGGAACAAGTCCGCTTCCAAGTGAAACGCTGGCGGGAAATGTTGGCTTAACCCCAA
 20 ATGCCGTCTGAAGAAATGTTAGACGGCATTTTTAAAGGCAAGAACAGATGACCGATA
 CGGATACCCAAGCCGACCGCTTCGAACAGATGATGTGGCAGGCGGTGGACAAACTTTTGG
 AACAGCATGACGGCAAACCTCGAAAGCATGGACGGGCGGGAACAGGAGCTGGTTTTGATT
 GGGCGACAGAAGCCGATATCGGTAACGGCAGCATACTGCAATTTGTCTGCAACTGGGGTT
 TCCCGCCCGCGAAAGACTTGTTCGTTCTGAAAAAATCGGCGCGGTACACAGCGCAA
 25 TGCTGATCCATCGGGCGGCAGACGATTGGACAAAGAAATCCGCCGCTCCAATCGGAAG
 GTAAAAACCTGAAAGAAATGTGGGATATAACATCTCGACAACAAACCGCCTCACTGCTG
 AACAGTCTGGATGAACAATATTGGCAAGACCCCGACAACTGTATCTGCTGGGATGGCAA
 TACTATTCCAGCAACCTGTTCAGACGGTGGCGGATTTCGCATATAACGTGGGCCAATCTA
 TGTATAATAGGAATTCAGAAAGAGTAGAAAAAGATAAGGGAATGGAAATAGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 40>:

gnm_40

CATGAAAAATGCAGGCAGTTGTTGTGAATAAAAATGTAGCGGGCGATGTGGAAGTAATCGA
 ACGCGAGGTTTCGCCGTTTGAATACGGCGAGGCATTGGTCGAAGTCGAATATTGCCGCGT
 35 GTGCCACACCGACCTGCACGTTGCGGACGGCGACTACGGCGAAAAACCGGGCCGCGTGT
 GGGACACGAAGGCATCGGTTTGGTTAAAGAAGTTGCCGACGGTGTGAAAAATCTGAAAGT
 CGGCGACCGCGTCAGCATCGCTTGGCTGTTCCAAAGCTGCGGCTCTTGCAATACTGCAA
 TACCGGCCCGGAAACCTGTGCCGTTCCGTATTGAACGCGGGCTACACCGCCGACGGCGG
 40 TATGGCGACCCACTGTATCGTGAGTGCCGATTACGCGGTCAAAGTCCCTGAAGGTTTGG
 TCCTGCGCAAGCTTCCAGCACTACTTGTGCCGGTGTAAACCACTTATAAAGCCATTAAAGT
 TTCCGGCGTTTCGTCCGGGACAGTGGATTGCCATCTACGGCGCGGGCGGTTTGGGCAACTT
 GGGGTTCCAATACGCGAAAAAAGTATTCCGGCGCGACGTTGTGCGCATCGACATCAACGA
 CGCAAACTGGCGTTTGCCTAAAGAAACCGGCGCGGATTGGTTGTCAACGCCCGCAAAGA
 45 AGACGCTGCCAAAGTGATTACAGAAAAAACCGGCGCGCACACGCTGCGGTGTAACCGC
 CGTATCTGCTGCCGATTCAACTCTGCCGTGAATTGCGTCCGCGCGGGCGGACGTGTGGT
 TGCCATCGGGCTGCCGCCGAATCGATGGATTGTCCATCCCGCGTTTGGTTTGGACGG
 CATCGAAGTGGTCGGCTCTTTGGTCCGCGACGCGCAAGATTGGAAGAGCCTTCCAATT
 CGGCGCGGAAGGTTTGGTTGTGCCGAAAGTCCAACCTGCGTGCTTTGGATGAAGCACCCGC
 50 CATTTTCCAAGAAATGCGCGAAGGCAAAATCACCGGCCGTATGGTGATCGATATGAAAA
 AGAATCGCGCTGCCGCCATCACCACTGATTTGACGTGGCAGTACACATCGAAATGCCGTC
 TGAACGCTGTTAGACGCGCATTTTATGGATTGTGATTGATTTTAACTCTGTTCTGTTT
 GAAATACCGTCTGAAAACCCATATCGCAACACTTCATTAAAAACGGCAAGATTAGCCGT
 TCTGCAACCCGTTCAAACGGCTTCCGCCATTCCAACGCCTGTTTGATGTCCACGGCGAC

5 GACGCGCAGACACCTTTTTCTGTCATGGTTACGCCGACCAGCTGCTCCGCCATTTCCAT
CGTCAGGCGGTTGTGGGAGATGTAGAGGAACCTGGGTTTGCGCCGACATTTCTTTGACCAG
CCTGCAGAAACGCGAGGTGTGGCGTCGTCCAGCGGGGCATCGACTTCGTCCAAAAGGCA
10 GAACGGAGCGGGGTTGAGGCTGAACAGAGCGAACACGAGGCTCATGGCGGTGAGGGCTTT
TTCGCCGCCGAGAGGAGGTGGATGGTGCTTTTTCTTGCCGGGCGGACGCGCCATAAT
GGACACACCGGCGGTGAGTAGGTCGTGCGCTATCATTTTGAGAGTGGCTTCGCCGCCGCC
GAACAGGGTCGGAAGAAGGTTTGGACTTTGCTGTTGACGGCATCGAAGGTTTCTTTGAA
ACGCGCTTTGGTTTTGTCGTGATTTGGGCGATGGCTTCTTCCAAAAGGGTGATGGCTGC
15 CTGCACGTCTTCGCTTTGGCTGCGGTAGTAGCCGTGCGGTTCCGCGCTTCTTCGAGTTC
TTGCAGGGCGGCGAGGTTGACCGCGCGAGTGCTTCGATTTGTTGCGAAAGGCTGCCGAT
GCTGCTGTTCAATACTTTCCGCGATTCTTTCGCCAACGCTTCGAGCGCGTCCAAATCGGC
GGCGCTTTCGGTCAGGTTTTGATGGTAGCGTTTGGCGTTGATCAGGGCTTCTGCTGCTG
CAACAAGGCGGTTTTGGGTGGCGGCTGAAGCTGCGGCAGCTTGGTTTGACAGGTTTTGCAC
20 TTTAGCGTATTGCTCCCTGCCCTGTTCTGAATCTGCGCGAGTTTCTTTCACACAAT
ATATTCTTCGTCCAAGGTCTGTACGGCTTCGCTTAATTCTTCAAGCTTGATGTGCTGCTC
GTCGTTTTGGAACCTCGGTTTCATAGGCGAGGGCAAGCTCTTGCTGGCGTTCTGCCAGTC
GAGGGTTTTGCTGTTCAAGCTGGGCGATTTGCTGCCGGTAGTTTTGTTTTGCTGGTTGAG
TTTGTGGACGGCGACTTCGGCAAGCCCGTATTGGCGGTTGGCTTCCAACAGGGCAAGCTG
25 CGCCTGTTTCAGACGGCTTGTGCTCTTGGCGGCTGTGCGCGGTGGTTTGTGCTGGTG
TTCGAGTTCCGCGCGGCTTCTGCAAGGTAAAGATGTCGTCTGAAAGCCCGTCGGACGT
GTGTTGCAACACGGTCTGTTCTTCCGCCAACTGCGCCAGTTCGCGCTCGATGTGTTGCGC
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 41>:

gnm_41

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 42>:

gnm_42

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50 TGCACACTCCTTGGAATGGTTGATGCGGTAATGGATAAAACCGCTCAGTCCAATTTGTC
TAGTGCTCAGACTATCGGTATAACAATACTATCCGGCATGATTTTCTTTTGTATGAC
AGGGAGTAACGTTTTCAGACTTGGCATTATCCACCACAACGGTATAGACCCGTCGGTTGCG
TTTCAGAAATGCCGAAAACAACCACTTTTCTGCCGACCGCGACCAGCTCTGCCTTTACG
CCGTCCGCCGAAATCGCTTTCGTCCGGCTCGACAGGGCCCTCAAAAACCTCATCGGCAGC
55 CAAGGCCAAATGATGGTTGATAACCGTGCGGATTTTACGGTAGAACAGTGCTGCCGAATT
GGGATGGATACCAAAATATCGGCGGCAGAACGGGCGGTAACCTCCAGTACAAAAACGG
AGCAGTTCTTCTGTACTTTTTCTTTAATTTGCAGTGCCTTATCTCATATTTTCGAGGG

TAACATATCTGCTAATCTAGTACAGCCCCAAAAATATACCAAAACAGCAAAACAAATTG
TAAGGATACGTATAGGCTTTGTAAAGGTAAATTGTGAAAAAGCAGTTTTTAAACGAAT
GAAACGGCTTCGGGCTGAAATATATGCTGATGCCCTGTTCTTCCCGTATTCTCGTGTGT
5 TGTCAAAGTGCAGGCTGCTTTGAAATCGGTATTGCCATCTATGAACCACCACTTTGCTTT
ATTTTCAGCGGGCTTGAGATGTGTATAAGAATATTGTTTTGAATAAATTTAAAGAAAATGA
TAATCGTTATTGACGATTTTTAAAGGAAAGCGTAGAGTGCCAATTCTATGAAGCAATACG
GTAAGTAACAATGAAAAATCTACTGCTTGGGTATAGAGCATATTTACAACCCGTAACT
ATTCTTGGGAAACAGAGAAAAAGTTTCTTCTATCTTGGATAAATATATTTACCCCTC
10 AGTTTAGTTAAGTATTGGAATTTATACCTAAGTAGTAAAGTTAGTAAATTTATTTAAC
TAAAGAGTTAGTATCTACCATAATATATTCTTTAACTAATTTCTAGGCTTGAAATTATGA
GACCATATGCTACTACTATTTATCAACTTTTTATTTTGTATTATTGGGAGTGTTTTACTA
TGACCTCATGTGAACCTGTGAATGAAAAGACAGATCAAAAAGCAGTAAGTGCGCAACAGG
CTAAAGAACAACCAAGTTTCAACAATCCCGAGCCAATGACAGGATTTGAACATACGGTTA
CATTTGATTTTCAGGGCACAAAATGGTTATCCCTATGGCTATCTTGACGGTATACGC
15 AAGACAATGCCACAATAATGGCTTTCCGACACGCCAGGGCAGGATGCTTACTCCATTAAT
TGATAGAGATTAGCGTCTATTACAAAAAACCGACCAAGGCTGGGTCTTGAGCCATACA
ACCGACAAAACAAGCGCACTTTATCCAATTTCTACGCGACGGTTGGATAGCGTGACG
ATATTGTTATCCGAAAAGATGCGTGTAGTTTAAGCACGACTATGGGAGAAAGATTGCTTA
CTTACGGGGTTAAAAAATGCCATCTGCCATCCTGAATACGAGGCTTATGAAGATAAAA
20 GACATATTCCTGAAATCCATATTTTCATGAATTTTACTATATAAAAAGGAGAAAATC
CGGCGATTATTACTCATTGGAATAATCGAGTAAACCAGGCTGAAGAAGATAATTATAGCA
CTAGCGTAGGTTCTGTATTACGGTTTCACGGTACAGTATTACCCGTTTATTCGGGAAA
AGCAGCAGCTCACACAGCAGGAGTTGGTAGGTTATCACCACAAGTAGAGCAATTGGTAC
AGAGTTTGTAAACAATTCAAGTAAAAAATAATTTAAAGGATCTTATTATGAATGAGGGT
25 GAAGTTGTTTTAACACCAGAACAATCCAAACCTTGCGTGGTTATGCTTCCCGTGGCGAT
ACCTATGGCGGTTGGCGTTATTTGGCTAATTTGGGTGACCGTTATGCGGATGATGCTGCT
GCAATTGTGCGTAAGGATGCAAACTTAAATGGTTTGAATTTATGGATGAAAAAGGTGTG
GAAACCTATGGGATGATACGGTCCGTAAGGACCCGTTTAGAGAAATTTGATCGGGTT
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30 AACACTAGTGAATTTGAGAGAAGTTACTATAAAGCCGTTACCGAAAATGGTGTCTTCT
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GCATTAGGTTTGGGGATAGAAGCCGAACGTATCCACAATGAGCAAGCAGTAAATAATCCG
AACGGTAGCGAAAGGGATAATAGAAAGCAGTTAATATCTGCTTTAGATAAAGGATTTGAT
GGATCTTTTAAAGAGAAGCATTTTACTTTTTTACAATCTGTGATAATGGATGTAACAAAG
35 TTAGGTGTTGAATATACAATAGATGGTTGGCAAAAATTTGAGGTTGGGGTAATGGGATA
ATCAATGATTTATATAAAAGTGTGTAAAAAGAGAGTGGACTGGAATATTGAGATCGTT
AATAATAACATCAAGCAATTTAGAGATCTGTTCCCAAATCCGGAAGGCTGGATCGATGAT
GGTCACCAATGTTTCGCTCCTTGGGTAAAGAACTAAAAACGCAATGGCAAATATCAT
GTCTACGACCCCTTGCCCTAGATTTGGACGGAGACGGCATAGAACTGTGCTGCCAAA
40 GGCTTTTCAGGCAGCTTATTTGATCACACCAACAACGGTATCCGCACCGCCACCGGTTGG
GTTTCTGCCGATGACGGTCTGCTTGTGCGCGATTGAACGGCAACGGCATCATCGACAAC
GGTGCGGAACCTTTCGGCGACAATACCAAACTGGCAGACGGTTCTTTGCCAAACACGGC
TACGCGGCTTTGGCCGAATTGGATTCAAACGGCGACAACATCATCAACGCGGCAGACGCC
GCATTCCAATCCCTGCGTGTATGGCAGGATCTCAACCAGGACGGCATTTCCCAAGCTAAT
45 GAATTGCGTACCCTTGAAGAATTGGGTATCCAATCTTTGGATCTCGCTATAAAGATGTA
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AAAGACAAAGTGAACCTCACTGCCGAACAGGCAAAAGCCGCAATCTTGCGGGCATTGGC
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50 GCTTATTCTGCCGCCGAACTAAAGAAGCACAGTTGGCATTGTTAGATAATTTGATTAC
AAATGGGCGGAAACCGATTGCAACTGGGGCAAAAATCGCCAATGCGACTTTCAACCGAT
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AAGAACGCTTTAGTTTCCCTTTCTGATAAAGCTAAAGCAGCTATTGACGCCGCCCGCGAC
CGCATTGCCGTGCTTGATGCCTACACGGGGCAGGATTCCAACACACTCTATTACATGAGC
55 GAGGAAGATGCGCTTAATATCGTCAAAGTAACCAACGATACATACGACCATCTGCCAAA
AACATCTACCAAAACCTGTTGTTCCAAACCCGTTTGCAGCCATATTTGAATCAAATCAGT
TTCAAATGGAAATGATACGTTCACTTTGGATTTTAGTGGTCTTGTTCAGCATTTAAC

-431-

CATGTCAAAGAACTAATCCGCAAAAAGCTTTTGTGGATTGGCCGAGATGCTTGCATAT
GGCGAACTTCGTTCTTGGTATGAAGCCGAAGACTAATGACCGATTATGTGGAGGAGGCA
AAAAAAGCAGGTAAATTTGAAGATTACCAGAAAAGTGTGGGTGAGGAGACCGTTGCATTA
TTAGCTAAACATCGGGTACGCAAGCAGATGATATCCTGCAAAATGTAGGCTTTGGTCAT
5 AATAAAATGTTTCTTTATATGGTAATGACGGCAACGACACTCTAATCGGCGGCGCGGT
AATGACTATTTGGAGGGCGGCAGCGGTTCCGATACTTATGTCTTCGGCGAAGGCTTCGGT
CAGGATACGGTCTATAATTACGACTACGCTACCGGACGCAAGACATCATCCGCTTTACC
GACGGTATTACAGCCGATATGCTGACTTTTACCGAGAGGGCAACCATCTTCTTATCAAG
GCAAAAGACGGCAGTGGACAAGTTACTG

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 43>:

gnm_43

CCTCGTAAAGTTCATGCTTTTTTCATGGAAATAGAAAACGACGGTGTGATTAGGGGTT
CGACCAGCGCAACTGCTCCCGATACGCTATACTGCCCGTCAGTACATAGGTTACACTGA
15 AGGCGACGCTGAAATGCAGTGCGGCAAAAGTCAGGGTTTTAAGCATCATCTCTCCCGGA
TTGGACATTGACGGAGAGATGATAAAGATTATCATAAGGCTGCGCGGTTTAAATTTGCTA
TTTGTGTTAGTGTAGATAAATCGTTTTTAAATAAGGATAGGAATTATGAATCATAAAA
AGATCGTTGTTTTGGATGCGGATACTTTGCCCGGCCGGGTTTTTCATTTTGATTTTCCGC
ACGAGCTTGCGGTTTACGGTACGACAGGTGCGGATGAAACGGCAGAACGGGTGCGCGATG
20 CACATATTGTCTACTAACAAGTGATGATTTCTGCCGATATTATTGCGGCTAATCCGC
AGTTGGAGCTGATTGCCGTGAGTGCACCGGCGTGAACAATGTCGATATTGGGGCGGCGA
AGGCGGCGCGGTGTTGCGGTATGCAATGTCCGCGCATACGGAACGAATCGGTTGCGGAAC
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CGGCAGGATTGTGGGAAAAGTCGCCGTTTTTCTGCCATTACGGCGCGCGGATTCCGGATT
25 TGAACGGCAAAACGCTGGCGGTTTTTCGGACGCGGCAATATCGGACGGACGCTTGCCGAT
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GTGAAGGCTATGTTTCCTTTGAAGATGCGGTACGGGCTGCTGATGTGTTGCTCGCTGCACT
GTCCGCTAAACGCCCCAACTGAAAATATGATAGGCGAAAACGAATTGCGGCAGATGAAGC
CTGGCGCGGTTTTTAATCAATTGTGGGCGCGCGGGCTGGTGGATGAAAACGCGCTGCTTG
30 CCGCACTCAATACGGGCAGATCGGTGGGCGAGGTGTCGATGTTTTGACGAATGAGCCGC
CCAAAAACGGCAATCCCTTGCTGAATGCACGATTACCCAATCTGATTGTTACGCCGCATA
CCGCGTGGGCAAGTCGTGAGGCTTTGGACAGGCTGTTGATATATTGTTGGCGAACATTC
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35 CGACTTTGTCGCCCGGCTGCGCGCTGTATCCACATCCAAGAGCTTCAGTTTCCCGTCTG
CCGTGGCGGCACTCAAATCATGCCTTCAGATACACGAATTTGCCATTTTGC CGGGG
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40 TCATAAAGTCGTGAAACTCGCCTGTTCCGCGACTTTTTCTGATTTGCCCTCTTCGGCGG
CAGGTGCGGCTGCGGCGCGCATGCTTTGTTGTTGGCTTCGATTAAATCGTCCACTTGTT
TTTGCTCCACTCGTTGCATTAAATGTTCTGATTTGTTGATGGCGTGTGTTGCCCAAGGTAT
CGCGTGATTTGCCCAAGTGATGGCTTCCAAATTCAGGAATTTGGCGGCGTTTGC CGCGG
TTTGGCGCAAGACGGGGCGAGGTAGGCGGTCAACATGGTGAAGGCGTTGATGAGTTCGC
45 TGCACTACTTCGTGCAGGCGTTCGTCTTGGCCTTCTTGTTTGGCGAGTTCCACGGCTTGT
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CGTATTCGCGGCTTTCTGATGATTCCGCAATGGCTTCGCTTTGCGCAGTCAGTTTGGCA
GCAATTTCGCTGTCGGCAACATCTTTCAGACGGCCTTCAAAGCGTTTGGCGATGAAACCTG
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50 AGTCTTGACAGGTTCAAATCGATGTCTTCGATTTTGTGTTGAGTTTGGCGGCGATGATG
AGCGCATCCACTCGGGGTTCAGGCCTTGTTCAGATAGGATTTGGCGGTAATAAACGTGC
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CAAAATCGACGCCGATGCGGTGCGACAGGTTTTTAAACGACGCCATGTAGCCGACGGGCG
CGTCCAGCCAGACGTAGAAGTATTTGCCCGGCGCGTCCGGGATTTCAAACCGAAATACG
5 GCGCGTCCGCGGAAATATCCAGTCGGACAGGGTGGTTTCTTACCTTCGCCAGCCATT
CTTTCATTTTGTGAGGGCTTCGGCTTGACATGGGGCTTGCCGTGTCGGGTGTTGTC
CGGAAGTCCATGCTTTGAGGAAGTCGGCGCATTCGCCAGTTTGAAGAAGAAGTGTTCGG
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GGGAATAGGTGTCGCCGAGACTTCGCAGTTGTCGCCGTATTGGTCTTGGGCGTGGCATT
TCGGGCATTTCGCTTTGACGAAGCGGTCCGGCAGGAACATTTGTTTTTCGGGGTCGAAAA
10 GCTGCTCGATGACGCGGCTCTCAATCTTGCCGTTGGCTTTCAGCGCGCGGTAAATGTCTT
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AGCCAGTAAAGTCGGCGAGGTGCTCTTCGCGCACTTTGGCAATCATGTCTTCGGGCGCGA
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15 CGACCATGTGGCCGAGGTGGATGCTGCCGTTGGCATAGGGCAGGGCGGAGGTAACATAAGA
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20 GACAGTTTGCGACGTGGCGCGGTGCGCGGATAACGTGCACACCTTCGGTGGCATTAAAA
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25 CGCCCTAAAAACAGCGCGCTGGTTTTCTTGCCAAACTGTTGCGCCCATGCGGCAATTTGA
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AACAGCGCAACAGTTGCGTGGTAAACGCTTTGGTTCGAGGCGACGCGGATTTCGCGACCG
GCACGGGTATAAAGCACAGGCGTCTTTTCGCGCGGCGAGGGCGGATTCCATCACGTTGCAA
30 ATGGAGAGGCTGTGGCGGTGTCCCAAGGATTGGCGTATTTCAACGCCTCCATCGTGTCC
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CGGTATCGGTATTCGCTGGCGATTTCGACGTGCGACGGGATTTTTCGATGGATTCCAAC
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35 TCGAGGAAACCTCCGCCGTGCTGCAATCGCGCGGGGCTGCTCGTGGATTCTTTTTCG
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TTGCGTTTCGGCAGGCGAGGCGTTTTATCGGTGAGCTTTTGATGCCGTCTGAAGCCAGC
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40 CGCGCCACAATAATTATCAGGCTTGCTTTGGGCAATAACCGCGATGGCGTATGCGCCG
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TCGTGATTGATGCTGTGTGCGATGACTTCGGTATCCGTTTTCGATTCAAACCGGTATCCC
AAACCTTCAAACGTTTTGCGTTTCGCTTTCAAAGTTTTTCGATGATGCCGTTGTGTACGACC
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45 GCCCAACGCGTATGTCCGATGCCGATGCCGCGCTGATGCCTTTTTCGCGTGCCGCGTCC
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TATCCGTTGAAAAAAACAGGCGCGGACGGCTTCGTCGCCGACCTTCTCTTCGGATT
50 AAAAAAGGAGGATTTCCCTGTTTATCCAGGATGGGCGTTTCAGACGGCATTACCTGCTGC
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GGCGGTGTTGGCGGGCTGCGGCAAGGATGCCGCGGTTACGAGGTTATTGGCGCGAAAA
55 GTCGGACAAAAAGAGGGTATGATTGCCGTCAAAAAGAAAAAGGCAATTACTTCTTAA
TAAATCCACGTGGTTACAGGCAAGGAAGAGTCTTGTCTTGTCTGAAAAAGACGGCGC
GCTTTCGATAAACACAGGATAGGGGAAATCCCGATCAAACCTTCCGACGACGGGAAAGA

5 GCTGTATGTCGAACGTAGGCAGTATGTCAAAACCGATGCGGCGATGAAGGACAAAATCAT
CGCCCATCAGAAAAAGTGGGACAAACAGCACAGGCATACCGCGACGCGGAAATGCGTT
GCCGTCAAACCAGACGTATCAGCAGCATCTGGCGGCGATCGAGCAATTGAAACGGGCGTT
TGAAGCCGAGTTTGACGAATTGGAAAAAGAAATCAAATGCAACGGCAGAAGCCCGCAT
10 GTTGCTTTTAGTAGGGGACAACCGGGAGGATGCCGCCGTCCGAATCGGATGTGCGGTTTCT
GTACCGGTACGGGCGGGCAGGAATGTCGCCTTTTTTGTTCGGATGCGTTTGAATACCCG
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15 GATTTAAATTTGATCCACTATAATTCCGTCAAATAAGAAAGGAATTTTGTGCTGCGGTA
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20 GGGCTTTGCGGGTAACCGGATGGGCGGTGGCGACAAATAAGGGCGCACCCAAGGTAATGT
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GGCCGTCAATTGCTGCTTCCGGCAAGTCGCGGAAAAAGATATAGCTGGGGTTTTGACCCA
AACTTCGGCGAGGCGTTGCGGATTTTGCCGCATATAAGACTTAATGCCCTGCATGGAGG
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25 GTTCGTTTTGTGCGCATAGCCGATGCGGATGTATTTGCCGGACGGGTTTTGAGACGGC
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GGCTTCTTCAAACCTGCCTTTGATTGCTGTTGTGCGCGCGGTGATGGGGAATCGGGAGA
GGTCGGCGGTATGTGTCCGCGCGGTATTGTGCGATTGTGCGCGTGTTTTTTCCGCTCTGCC
30 TGATGCGGACAAGGGCTTTTCCGCTCCGCAACCGGCAGGCAGGGGGACGGAGATAAAAT
CGTCGGGAATACCGTAAATCGGGAAGCGTCTTGTCGCGTCCGCCTGTCGTGCGCCTTCA
GCACCGGTTTCGTAATAGCCGGTAACCGTACCGGCAAGGCTTCGTTGCCTGCAACCTGCC
ACGGCGTGAAATAGCGTTCAAAAAACTGTTTTGCCTGAAAGGAATGGACGGGGGTTTGA
AGGCTTGGGCGCACACATCTGCCAGCCTTGCGGTTTTTCAAATTGGCGCAGCCAGGC
35 GGAAGGATTGCAGGCTTTGGCGAAATCCTGCGCGCCAGTGGGGCAGGGACAGGTGCG
GTACAACGGTATAGACGGCCCCGCCGCCGACCGTCGTTCCGGCGGGGTGCGGGATGC
CGACCGCGCGGTCCGGCCGTTGATGACGGATGTGTCGGGTTGCGGAAAGGTTTGGATGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 44>:

35 **gnm_44**

CCGGGTAAAGAAATTGTACAAGCGGACAAAATATTTAATGGGTATCAAAGAATGACCTAC
CGTGAATTAGTTGAACGTCAGTTGGCTGTGCGCCATGCCGATTTGGAATTGGGCTTAAGC
CGCGCACGCGAGCAAGAGCCGTTTGTCAATCATGTTTCCGATCTGTTGGATAAGGCAGGC
40 ATTGAGTACGCGGTACGCATGGATAAGGATTTTCAGACGACGTTTACCTTGAATATCCA
ATTACGAATATGACACCTTTAAACGTGCGGTTTGCCAACTTTGGGGGCGTATTACTGT
GTTTGAATGATGGTGTGACTGGAGATTGCCAGCAATCGCCCTGACGGTTACGCCGTC
CGTATCGTATTCGGCGATGTGCCGTTTTAAAGGGTTTTAAATGGACTTTGAATTTGGTT
TCAGAACCCTGTGGCGATTGCGACGGCGGCATTTTGGTTTTGGGTCAACGGCATTTTCAG
45 GCCGCTGAAAGAGGCGGACAAGCGTATCGACGACCTTAAAGAGGAGTTGCACGCGGTCA
AGCTCTCTTATCACACCAAGGCGGACGCCAAGCAGACAGCACTAATATTGCGGCGGCCCT
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AATCATGAGCGACCCGATTTTGGATGCCCTTGCGCGTATTGAAAACAAGACTGATCAAAC
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50 TAAAGCGAAAATGGGACTGTAATTATGGCTACCCGCAAGAAATCCGTGAAAAGTTACGC
CGGCTCATGTGAGCGGCGAGCAAACTTTGAAAACGGCGGCCCTTGATGTGCGAAATCCCCG
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5 GCCGGTTTTATGGTGCAGTACAACAGCACGATGACGATGCTGCAGGATTCGAGTACCGAA
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ACCGTATCGGCCAATGCGCGTGTGATGCCGGAACGTCAAACTGGCGACGGCTTTGGAA
10 TTGATTGAGTTCTTGATGGCGTTTGTACAAGAAAAACATCCCAAACATTTGCCTGCCTTT
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15 TGATGTTTACTGTGACAACACCAAGAATGGCGGATAGGCCGCCATCATCGGTAAGGAAG
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20 AAGATTTTTCTGAATACCTCTATTTAACCAGTTCATAAATTATTCCTCATGAAAACAA
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25 CCAAAGGGGAAATGAGGCGGTGGGTGCGCCGCTGGAGAGGGTAAGTCGACGAAGGTTA
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35 GAAACGACGGCGAGACGGTGGCCGAGGCGTTTTATCAGGCAACAAAGACGAGATGGAGC
GCGGCGCGGTCACTTCTTGGGCGCGCGTGGCGTACTCGCGCTGATGAAATCCGTGCGC
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40 TTGGCGGTTATCAACGTGTAACCGGCAAACTGTATGTCGTGGAGGCTCAGATTAAAAAC
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AATTACGGCGACCGGTGGGTTATCGCGGAGCATCCGTCCAATTTTATTACGGCGAAAA
50 GATGCGGGCCCTCTTCGAGGACGAGAAAGCGGCGACATCCGCGCCCAACAGAGCTTTT
CGCGGACATTGAGGAGCGCGACAGCGACATCGCGGCAATATGGGGACGCGCAACGCGC
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55 AGACGGCCTTTACCTACCCGAACTTTATCCACCGCCCGCAAAGCTGGTTCAAATGGGA
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10 CTCCCGAACGGGAAAGCAGCAGTCCAGATGGGCGTGCGACCCGGGGCGAGCATTTCATT
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 45>:

gum_45

15 CGCGTCCAAATCAACcGCGACACCGGCGAATACCAAACCTTCGCGCGCTGGCTGATTGTC
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25 AAGCCAACGACCGAGCGCATCGATCCGCAAGGCACCTGTATCGGCGTTTCGCGGTTTCGCGTG
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40 GCGCGGATTTTCTTACGCAACAAAACAGGGCTATCAGGTTGGGGATAACCATAAACCG
TTGAACATATCCGACAGACTCAAACCAATCGACTTTGCCGAGCGTACCCAAAACAATG
GCAAGCAGAACCAATGCCGATAGATGCCAAGTGTCTTCCCTGAAAAGAAAACGGATA
TTGGACTCGCCGAAATAATACCAACCGATGATGGTGGTGAAGGCAAGAAGGTCAGACAC
ACGGCAAGCAATTGCGAACCGAAGCCCGGAAATGCCTTGTTAAAGGCAAAATGAGTAACC
45 GCCGCGCCCTGTTCCGCCGAAAGGTTGGCATCGGTGAGCAGGATAATCAATGCCGTAGCC
GTACATACCAAAATCGTATCGATAAACACACCGACAAATGCCGCATACCTTGCTGCACA
GGGTGCTTACATCCGCAGTCGCGTGGGCGTGCGGAGTCGAACCCATACCTGCTTCGTTG
GAAAACAGACCGCGCGCCACGCCGAAACGTATCGCTTCGCGCATACCGATACCCGACGA
CCGCCAAAACGGCTTCGGGATTGAAGGCGGCGTAAGATGTGGTTGAACATCGGCACA
50 ATATGGTCGGAATAATTCAAACAGGATAAACGACGGCGCACAAAATATAAACAACCGCCATA
AACGGCACGACAAATTTGGGCGATATTGGCAATACGGTTTACGCGCCCAATCACAACCATG
CCCGCAAGGACGGCAAGCACAATACCGACTGCCAAGAAGGCACATCAAATGCAATGGTA
ACGGCAGAAGCAATGGAGTTTGCTGTGTCGATTACCGATAAAGCCCAATGCGATAATC
AACGCAATGGAAGAAGAACCGGACAAAAACGCGCCGCGCCCTGCCGATTTTCGGAGTC
55 AGACCGTGGGTGATGTAGAACGCGCGCCCGCGATGATTTGCCGTGGCTGACGACGCGG
TATTTCTGCGCCAGCAGTGCTCCGCAAAAATCGTGGACATCCCCAAAACGGCAGAAACC
CACATCCAAAAATCGCGCCCGGCCCGCTGCGGTGATGGCGGTGCCACGCGCGCAACG

TTGCCCGTACCGATTGCGCAGATATGGCAACCGCCAACGCCTGAACTGCGATAAAGAC
TTGTCGTCTTTATCGCCTTTGGCAAACAAGCCGCCGAATACGGATTGATCCCGCGCCC
AGCTTGGTAATCTGCGGCGCACCAGATACAGCGTAAAAAACAGGCCGATACCCAAAAGC
GCGTAAATCAGCAGGTAGTCCCAAAGGAACCGATTGACTGTACCCACCAGAACAGACAAT
5 ATATTTTCCATAAAATAAACCTTATCTTACATTAATAATGACTGCCTTCCAAAAGACATT
CCAATAAGGAAACACGGCGAGCAGACCGTATTTGCCGCAACAGATGCCTTAAATTGTCAA
CAATCGGGGAGAAGCTGCGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 46>:

10 GNMAA91R gnm_46

CCTTCGACCAAAACGACTTCGTACTGCGCCGCCAATTCTTGTGTGGCGGTGCGGATTTTG
TCCAAGTCCAAAGCCCTGCCATCCAGTCGGGCGGCGAGGTGAGGCGAAnGnGATAGCTG
AAGATTTGCGGCATAGTCAGCCGCCGTTTGTGCGCTTCTGCATCGGTATGCCATAATT
15 TTGCGGTGGACGGCGATGTCGTGCGCAATAACCTCATGATGGAATAGTACCGTTTTTCA
AAGGTACTTTAATCATAGAGCGTCGAGCTTGATCCATTGCTTTTTGAACAGCAACTGGTA
CTTCTTTTGATTACCTTTGCCCATACCAATGnGACCATnACCATCAACCAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 47>:

gnm_47

20 TTTATTATGCTGCCTTTCTGCTGTATTTCTGTCCGGTACCCTGAGTCAAGAGTCTGCA
TTTGAACCTTACCGTGCCATTGTTTCCCATCCTTTGGTCAAGCTGGTTTTAATCGGTGTA
TTGTGGGCTTATCTGCACCATTTCTCGCCGGTATCCGCTTTTTATTTTTGGATGCGCAC
AAAGGCCCTTGAGCTGAATACTGCGCGCAATACCGCTAAAGCCGTATTTGCTTCTGCATTG
GTTTTGACTGTCGTTTTTGGGAGCGTTGTTATGGTAGAACGTAAATTGACCGGTGCCATT
25 ACGGTTTGCSCGATTGGGTGATGCAACGTGCGACTGCGGTTATTATGTTGATTATACCG
TTGCACTTTTAGTGGTTCTATTTTCCCTGCCTAAAGAATATTCGGCATGGCAGGCATTTT
TTAGTCAAACCTGGGTAAAAGTATTTACCCAAGTGAGCTTCATCGCCGTATTCTTGACG
CTTGGGTGGGTATCCGCGATTTGTGGATGGACTATATCAAACCTTCGGCGTGCCTTTGT
TTTTGCAGGTTGCCACCATCGTTTGGCTGGTTCGGCTGTCTCGTGTATTCAAGTAAAGTGA
30 TTTGGGGGTAAGTATGGGTTTTCTGTTCGCAAGTTTGATGCCGTGATTGTCGGCGGTGG
TGGTGCAGGTTTACGCGCAGCCCTCCAATTATCCAAATCCGGTCTGAATTGTGCCGTTTT
GTCTAAAGTGTTCGCGACCCGTTGCGATACCGTAGCGGCGCAGGGCGGTATTTCCGCCTC
TCTGGGTAAATGTGCAGGAAGACCGTTGGGACTGGCACATGTACGATACCGTGAAGGTTT
CGACTGGTTGGGCGACCAAGATGCGATTGAGTTTATGTGCCGCGCCGCGCTGAAGCCGT
35 AATTGAGTTGGAACACATGGGTATGCCTTTTGACCGTGTGGAAGCGGTAAAATTTATCA
GCGTCCCTTCGGCGGCCATACTGCCGAACACGGTAAACGCGCGGTAGAACGCGCCTGTGC
GGTTGCCGACCGTACAGGTATGCGATGCTGCATACTTTGTACCAACAAAACGTCCGTGC
CAATACGCAATTCTTTGTGGAATGGACGGCACAAGATTGATTGATGATAAAGCGCGA
TGTCGTGCGCGTAACCGCCATGGAATGGAACCGGCGAAGTTTATATTTTCCACGCTAA
40 AGCTGTGATGTTTGCTACCGGCGGCGCGGTGCTATTTATGCGTCTTCTACCAATGCCA
TATGAATACCGCGGATGGTTTGGGTATTTGTGCGCGTGCAGGTATCCCGTTGGAAGACAT
GGAATTTGCGCAATTCACCCGACCGCGGTGGCGGGTGCAGGCGTGTGATTACCGAAGG
CGTACGCGGCGAGGGCGGTATTCTGTTGAATGCCGACGGCGCAACGCTTTATGGAACGCTA
TGCGCCGACCGTAAAGACTTGGCTTCTCGCGACGTTGTTTCCCGCGGATGGCGATGGA
45 AATCTACGAAGGTGCGCGGTGCGGTAAAAACAAAGACCATGTCTTACTGAAAATCGACCA
TATCGGCGCAGAAAAATATGGAACAACTGCCGGGCATCCGCGAGATTTCCATTAGTT
CGCCGGTATCGATCCGATTAAAGACCCGATTTCCCGTTGTGCCGACTACCCACTATATGAT
GGGCGGCATTCCGACCAATTACCACGGCGAAGTTGTGCTTCCGCAAGGTGAAGATTACGA
AGTGCCTGTAAAAGGTCTGTATGCGGCAGGTGAGTGCCTTGTGCTTCCGTACACGGTGC
50 GAACCGCTTGGGTACCAACTCCCTGTTGGACTTGGTGGTATTCGGTAAAGCTGCCGGCGA

5 CAGCATGATTAAATTCATCAAAGAGCAAAGCGACTGGAAACCTTTGCCTGCTAATGCAGG
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TGCAATTGCGTCGCGAACTGCAACGCTCTGTACAACTGCACGCCGCGTGTTCGCTACTGA
TGAGATTCTGAGCAAAGGCGTTCGAGAAGTCATGGCGATTGCCGAGCGTGTGAAACGTAC
CGAAATCAAAGACAAGAGCAAAGTGTGGAATACCGCGCGTATCGAGGCTTTGGAATTGGA
10 TAACCTGATTGAAGTGGCGAAAGCGACTTTGGTGTCTGCCGAAGCACGTAAAGAATCACG
CGGTGCGCACGCTTCAGACGACCATCCTGAGCGCGATGATGAAAACGATGAAACATAC
GCTGTACCATTAGATATCAATACCTTGTCTACAAACCGGTGCACACCAAGCCTTTGAG
CGTGGAATACATCAAACCGGCCAAGCGGTTTATTGATGCGTTTTTCAGACAGTCTTCGCC
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15 TTGTCTTTCCGCCGCTCCTGCCGGAAGGCATTTCGGGATCGGACGGTATGAACATCAAC
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20 CCGTCCGGTTTGTCTGAATGCTTACCGTTTCATTGCGGACAGCCGTGATACCATCACTAAT
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TGCGTAGACGTATGTCTAAACACTTGAATCCGACCCGAGCCATCGGTAAGATTAAAGAG
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25 GAAAAAGAATTCGAGCATTGAGCGATAAAGAGCTGTCCGAGTTTTCCGAAATCCTTGAA
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30 CAGGCAGGTTTGGAGCTGCCGCTATTGGAAGCCAGCATCGGGCAGATGTGGTTGACATT
CGGGGGCTGCAAAACCCGCCGGGATTTGTTTTCTTCGACCCCGGATTGTTTCAACCGCA
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35 ACGATGGTGATGAACAGCTGACTTGGTTCTTCGGGGGTTCCGCCGACGCGCATCCG
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CTTTCTTATTCCGAAAACCTTCTTCATATGATGTTGCGCCACGCCGTGTGAAGACTACAAA
40 CCCAATCCCGTTTTGGCACGCGCGCTCGACCGCATCTTATTTTGCATGCCGACCACGAG
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5 GTTGGCGGCGGTGCGGATGAGGCAATGCTGAAAAAGCAAGTCAGCGTTTTACGGCTGATT
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30 CTTTATCAAAGTAGATGGCGAATGCCGTACCAACCTGCCTAACGTATGGGCAATCGGCCGA
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35 CAAAGTACGGTTAAAGTGTGGCAGATGCCAAAACCGACCGCATCTTGGGCGTACACAT
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55 GCAACCTTGCCAAGCTCGCGAAGTTGCGTTCCAACCTGGGCTTGAAAGACAAACAAATCAA
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40 ACTATAATAAAACAAAAGATGATCTTTGATTTCACCAAGTAAATATATCGAGTATTCTCT
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45 AAAATAATAATCCCATGAGTTGCCTTTTCTAACTATCTTGTCTTCTTGTGGTTCT
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45 AAGCGTGAAGTTGTCCCAGTTTGCTGTTCTACACCGAAAAAGCTGTAATGTTGCACTTT
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5 GTGATCGGGCGAAAAATCCGCCATATCGCCTGTTTCGCCGTGATGGTTCAACACTTTAAT
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CGGACGGCTTTGCCGACGACGCTGACCGTTTCCAATCCACCGATTGCTCAGTTTTATG
CGG

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 48>:

gnm_48

15 TAGTGGATTAACAAAAACAGTACGGCGTTGCCTCGCCTTAGCTCAAAGAGAACGACTCT
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20 GAAACAACGGTTGTGCTGATTGACGAAGTGGATACCGATAACTGGGGAATAGGCGGCAAA
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25 CAACCTGCCGACTTCGCAAGGCTATTGCGATTCTAAAGGGCTGTATTCCGCCCCGCAAAGC
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15 CGGGCGAGAACTTGATAGGCCATGTTTTCTCTTGGTTTCGGTCGTGATGTTCTGTGCGG
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25 GCGTTTCGGCGGCGGCGTGCATATCGATGAGCAACAGGCTGTCTTCGGCTTGGGCAAGAAT
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GAAACGTGCCTGCTCGAATCGGCTTAACTCAAGGTCGATGTCGTGCGTTTTTTGTAAAG
TTCGGCGTAAGTATTCAATGCCGCGCGGCTTTCGCGCAGGGACAGGCTGCGTTGTTGCGG
30 CGCATATCGGAGCTGATAGGGCATGGGCGCGGTTTTGCCTGATGAACCAAGGCATTGTG
TGTATCTGATTGTTGCTGTCGGGTAGTTGGATACGCTATCAAACAGATTTTCGCTGTC
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35 GACGTTGACATCCACGGCTTCGGGCGGCGAGTTCGAGAAAGAGGACGAAGCGGGAGTGAG
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55 CTTATACCTATTACCAAGACTGAATCCGCCGAAATGACGACCCATCTGTCCAATGTCGCA
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25 GCGCGCGGCATCAAAGCCATCATCGCGGGTGCGGGCGGCGCGGCATTACCCGGTAT
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30 TTTGAATATGGAATTGGAACAAATTTAAACCCACCGTCTGCGAATATATAGTGGATTAA
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35 AGCCAACTGTTTGGCGCGGGTCAGGTTGCGGAACTTGGTGGCTGCCCCAACGAAGGCGG
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50 CGGTTTTTCGCTGCCATTTGGACGATGAACCTCGCCAAAGTCGCTTCTACCGCTTTAAT
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55 GCTTTGCAGCTCTTCTTCGTCCGTCAAACCGGCTTTGCGTTTGGTCATCAGCATATCCAT
CGCGGTACGACGGCTTTTGGCAAAGGCTTGTCTTGAAGGGAAATTGCGGCGTTTTGCTT
GAAAGTTTCCGCTTCATGTGAAATTTGATGGTTGCGTAGTCATGCGTTTTCTCCTCAA

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TCGGCAGGGGAAATGTGGTCGGGCAGGATGGCGAGGATGACCAAATCGCGCGGGCCGTGC
GCCCGGTAAGCAAGCGTCAGTTGGATGTCTGCGGTTTTGGACGGGCGGAAATCAGGAAT
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5 TTGTACATCTTGGACGTATCGAACAGGCAGAAATGCACGGGCGGAACGAGGCTTAAAGTA
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10 GCGCAGCCCCAATGTTTCAGACGCTCAACTTCGCTGCCCAAGAAACACCCATTTCACGG
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15 TGTCGTGTACCATTCGCCCGGAAATATCGGCTTGTGACGGAGAATGTGCCCGCGAAGC
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20 ACAGCGTCGGCCAGTGGTGTTCATCATGCGCGCGCACGAGCCGGACGGCACGACGATCG
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GGCCGGATGAATAGGCAGGCTGGCCGACGAGCTTTCGCCATCGGGAATGGACGCGTA
TGCCCTGCTGCTCGATTAGGGTAATGGCATCCATG

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 49>:

gnm_49

TTTTACAAGATGCCAAGAGTCATCTGTCAATTTCCATCTCAACTAGCACATAACCAGGATA
TGACTTTCTTCACTAATAGTCTTACGACCATTGCGGATATCAACAATTTCTCTACAGG
30 CACCAGAATTTGTCCGAAATAATCTCCCATCTCCTCACGGGCAATGCGCTCTTCCAATAT
TCGTTGGACATTCTTCTCAAACCCGAATACGCCTGTACAACATAACATTTTTTCGACAT
CTCAACCTTCCCTTCTCAGCAATACATCAAAAAATAACCACGAAATTTGCTGTATCTGCCG
CATAGATAAATATAGAAAGCACAGCAACAAACACTATAACAAATACAGTCATTCTGACAG
CATCTTCACGCTTAGGCCAAACACCTTTTGAATTTCGGACCAAGAATTTGAGAAATATG
CAAAAAACCCCTTCTTACCGGAATTAGATGACAGATTCTTTATCTTGAACAACCGATTGAT
35 CCACTTTAAAGCTTCTTTTTTTCAGGCGTATGTTCTGTCAATATTATTTATCCATCATAGCA
TCTGTCTATTCTCAATCCATGTAAATGGCAAGAGAGTTTACTAAATAACAAATACAAAAA
AATTAACCGACACAAGGCCGTTAATTTTTTATTTGGCAGGCCAAGAGGGTCTCGAACCC
CCAACCTTCGGTTTTTGGAGACCGATACTCTACCAATTGAGCTATTGGCCTCTAACTTAA
GCGATAACAGAAGAAACACGCCGGCACCCACGGTACGGCCGCTTCGCGAATCGCAAAG
40 CGCAGGCCCTTCTCCATAGCGATAGGCGCAATCAGTTCTACGGTGATGGTTACGTTTCA
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CGGAAGTAGAATTGCGGACGGTAGTTGGCGAAGAACGGAGTGTGACGACCACCTCTTCT
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45 TTGTCGCCCGCTGACCTTCGTCCAGCAGTTTCGCGGAACATTTCAACACCGGTACAGTG
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50 GAACCTTTGTACAATCGGGCAGTCAATCGCCGGGGAAGTCGTAGCTGGACAGCAGGTCCGCG
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5 GTAAATCATGTTTTTAACGTAGTCGGCGTGCCCCGGGCAGTCTACGTGTGCGTAGTGGCGG
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25 CAGCCAATCGGGAATATTTCGGCAGCGTACCCGCTCGAGATAGACGAATGCCCGGGGTT
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40 CCGCATATCCTCCTGGGACCATTTATTTCAATTCGCGCATCAGGCGGATTTTTTCGTGGG
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40 GAGGTCGCGGACGTGTCCGTAGGATGCAAGGATTTCAAATCGCCGCCCAAATATTTTT
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55 TGCCGTCTGAACGGCAGTGATGCGTTTTTCAGGTATTCCTTATTTATAGAATATGATGA
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CAATTTTGGCGCGTCTTAATCAGTTTGTGGCAGCCTTACTGTGTGATTGTCTATCGA

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GCCGGGTACCGCCATCACTTCGCGCCCCATCTCCGCCGCCAATCTGGCAGTAATCAGCGA
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30 ACCCTATTCCAGGATTAATAAATCTCATCAGCTATACTATCAAAAACAATTTTGCGTA
TTATATCCGTACTTATGTTATAAGGTATATTACCAATATTTTATAGGATTGGTTTTTAG
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TATTTCTGTAGTTTTGCATAATTTATGGTCTATTTCAATGGCAGTTACGAAATTACACC
TCTGTACTAATTCAAGGGTAAAATGCCCTTTTCTGAGCCGATTTCAAAGATATTATCAT
35 GTTCATTTAATCTTATATTTGTCAATATTTTATCTATATTATGTTTGAAGTAATAAAGT
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40 GGTTTAACGACTTAATTACGAAGTAAATAAGTCTAGTGTGTTAGACTTTAATGTTTTTTT
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AATGGCGTGTGTGTTAGCCAAAGCTTGATATCGAATTCCTGCAGATAAATATTCTTGGA
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CATAGTAGATGAATAAGATAAACAATACCCCATTTCTTGAAGGCTTGCGCGGTACTTTT
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50 CTCAGGGTATTTTTTTCAGCCAAGGCAATCAATTTTTTAAATGTATAAATCTTCTCTTT
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55 CAATGGCCTTGAAGCAATATTTAATTGCGCATCTGCTTAAAGAACCTTTTTAACAACCC
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5 GATATCAAATATACTTAACCAAAAAAATCTGAAGAAATCTACTGCTACTTCAGGGATAAT
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10 TATCCGCGATCGTGAGATTTTGCGCCGTATTTTGCAGAAAACCGCATTGATTCGGTGAT
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15 CAATCCGATTGGCGCGCATGAAAGCGGCTTGATTGGCGAGCAGCCAAACGGCATCCCGAA
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25 TGAGAAAAATCCTTGTTACCGCGCGCGCGGGCTTTATCGGTTCTGCCGTTGTCCGTCATA
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TGGCGCGTTATGAAGATTTGATTACTTTCTGTAAGACCGCCCGGCCATGACGTACGCT
40 ACGCCGTGACGCGAGCAAAATCAGGCGGGATTGCGGCTGGCTGCCTTTGGAACCTTCG
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45 GCTCCTGCCCGTGACGACAACCGATGATTTATTACCCCTTGTGCGTTTTGATGCTGGC
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50 AGCGCAACAGCAGCGCGCAACCGTGTGCTTATCAGGTCAAAAACCCGAAACGTTTCGG
CGTGTTGAATTTAACGAAACTTCCGCGCGTTTCCATCGAAGAAAAACCGCAACGCGC
CAAATCCGATTGGGCGGTAACCGGCTTGTATTTCTACGACAACCGCGCGCTCGAGTTCGC
CAAACAGCTCAAACCGTCCGACGCGCGCAATTGGAATTTACCGACCTCAACCGGATGTA
TTTGAAGACGCGCTCGCTCTCCGTTCAAATATTGGGACGCGGTTTCGCGTGGCTGGACAC
55 CGGCACCCACGAGAGCCTGCACGAAGCCGCTTATTCTGTCAAACCGTGCAAAATATCCA
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 5 CGCGGCCCTGCACTATCAAACGAAAAACACACAAGGCAAACTCGTACGCGTGGTTGTCGGC
 GAAGTATTCGACGTGGCCGTCGATATGCGTAAAGACTCCCCACTTTCGGCAAATGGGTA
 GGCGAAATTCGTCCGCGAGAAAACAAACGCCAACTGTGGGTACCCGAAGGTTTCGCACAC
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 10 CAAACCGCGCCGCTGCTGTGCCCCAAAGACCTTGCCGGCAAACGTGGGCGCAAGCCGAA
 AAGCTCCGCCCTTCGCTTTACCGATAAAAAATGCCGTCTGAACGTTTCAGACGGCATT
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 GCGGCGCATCCGAGCCGCGTGGTACGAGAGAGGCAATAATAAACGCCATAATCACAC
 15 GCTCAGGCTTTCACCGACAATCAGGCCGGCGGAGAACAAGGTTCCGATGCGCTCGGCGT
 TTTTCAGACGGCCTTCGCGGTTTTCCGCTTTTTTACCGATGATGTGTTTCAACACGCGC
 CCAACACGCGCCTGCCACGATGGGCATATTGACGGACGGCGGCAGATAAATACCCATAC
 CGACCGCAAGGACGGGCAGGGCAAGTTTGCCGCTGATGATTTTTTCAACACCAAATCGA
 CGACGATTAATACTGCTCCAATCAGCATACCGGTAAGATATAGACCCATTCAAGGTTGT
 20 GGGCGAAATGCCCGACGCGATGGTTCATCAAAGTCGCTTGAGGGGCTGCCAAAGCCT
 GCGCCGCTCCATGCCTTCGCGCGGCATTGCGCCGGTAAAGCCGTAGGCTTCGTAAAGCA
 GTTCCAACACGGGCGAAATAACAGCGCACCAACGATACAGCCGATAATCAGGGCGACTT
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 25 ATTTGCGGTTAGCCTCATCCGCCAACAACTCCGGATTGCGCTACCAGCAGCAAAACCA
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 AGTGGTAAACGACACGCCTAAACAAACATCATCGCCAGCACCAAAAAATCATAGCCT
 30 TAGGCGACAAATCCTGTTTCGGCGCGTTCCGACGCGGCGCACCGCCGCCAAACTCTTGA
 ACGACATCTTCATGCCTTCCACCATCGGCTTGAGCAGCATCAACAGCGTCCAAACGCGC
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 ACGCCGCCATTTCCATATCGGAAGTTGCGGAATGTGTGAGGAGAAATACGGCACGGCAA
 TGCCCCAAGCAATCGAAATGCCAACAGGATGGCGATACCGCCCGTCAGTCCGACCAAT
 35 AGCCCGCGCCCAACATGCCAGTGAAGGCCATCGGCAGCTGGAAATCGCCGTACCGC
 TTTTAAACCAATAACTCGCGTGTGCGCAATCACGCGCAGACCTCCGGCGCAAAGCTCA
 TCAATCCCGCCAACGACCGCGCGGCCAGCTCTTTGATGCCGTGCTGCTGACGGTTA
 TCCCTTCTTCATGACCGCCACTTTCAAAATTTACGACGCGCCACACCTTCCGGATAA
 GGCAAATCGCTTTTACCACCATTCGCTAACGCAGAGGAATGGTGAATACACCCCAAA
 40 ATCCCGCGGCAATACATAAAAGCGTCGTCTGCCAGAACGGGAAACCGCTCCAGTAGCCC
 GCCATTACGAAACCGGGCAGGACGAAGATGATGGTCGAAAGCGTACCCGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 50>:

GNMAB22R gnm_50

45 AATGAnCGGCGGCAGGCTGGCGACCGGTATCCATACTTCCGTCATGATTGAAGACAAT
 CCCGACATACCGCAGCTTTGGGCGCAATGTTGATTTTTnCTCTATCCGGTTCGGTATCG
 AAAAAACAAGGGGTGTAAGATTAGCCCTAAATCCACACCAATCCCGCAGATTTAA
 GCTGTTGAGACGGTGTGCCGAAGTTAAATCGAAATTCGATTCCTTCAAGAACAGCGGGA
 AAGATTTACGATCGATTCCGTTGTATTTTCGCAAGACGCGTTAGTCTAGAGTCTGTATA
 50 TTACATTATTTTTAGGGTCTGCTAGCCAAATTTCTTGTTCCCTTCATTATTTTATCTTCTG
 AAAGAAAATTATTTTTTCCATGCTATTAATATTAATGATATGATTTTnATTAAATAA
 ATGTTTn

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 51>:

gnm_51

```
5  ACAATTTCTCCTGCAGCGCCGATGATGTTTTTAACGATATCTGCAGTGCCGTTGAAGGCT
   TCGGCGGCATTGCCCGATCTGTCCAGCTCGGGGCTGTATCGGGTGGCGCGTTGAATCCG
   TCGCCTACTCCTTGGCGTACGATACCGGCATTGTGGAACGGTGGCAAGCCGTTGT
   CCGGTGCTGCGGTTGTGCGTCAGGTTGAGCGGATATTTGGGCAACGCCTTTATGTCG
   TAGCTGTATATATCCCTCGCGCCTTTGGGAGCGGGATAGCCGCCGCCCTGTGGCCCGTCA
   TAGCCGTCGGCGGGATGGTGTTCGTATCCGTCCCAATGGATGCGGTAAAGGCTAAATCCG
10  TCAACGGGACTACCGGTTTCATCAGAATCGGAATGTGAGGCATGGTTGTGGAAGGGGAA
   TGGACTTCGTGCCCGTGATCGGAAAAGCGGACAATGTAGCCGATATTTCCCTTAATGGCC
   GCCTGTTGAATCATCAGGTTGCCCAACTGATGGCTTTGTATTTTCCCAATCCGATATG
   ccGaCTGCGCTCGGCAAGTTCCCCCTGCTGCCGAATAGGTGGTATTTCCCGTCGGGTTG
   GAAATGCTGACGGTCGAGAACCTGCCGGATAAAAAGAATCGTTGCCAAATCTGAGGCGTG
15  TGCATGCATCGGCAGGCACACTGC
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 52>:

gnm_52

```
20  GCTTGCATGCCTGCAGGTCGACTCTAGAGGATCCCGAAACGCCGTGAAATCGGTCACGGC
   CGTTTGGCTAAACGTGCATTGTTGGCCGTATTGCCGAAACCTGAAGATTTCAGCTACACC
   ATGCGCGTGGTCTCCGAAATTACCGAATCCAACGGCTCTTCCTCTATGGCTTCGCTGCG
   GGCGGCTGCCTGAGCCTGCTGTCTGCCGGCGTGCTTTGAAAGCACACGTTGCCGGTATC
   GCGATGGGTCTGATTCTGGAAGGCAACAAATTTGCCGTCTGACCGACATTTGGGCGAC
   GAAGACCACTTGGGCGATATGGACTTTAAAGTGGCCGGTACGACCGAAGGCGTTACCGCG
25  CTGCAAATGGACATCAAATCCAAGGCATTACCAAAGAAATTATGCAAATCGCTTTGGCA
   CAGGCCAAAGAAGCGCGTCTGCACATCTTGGATCAGATGAAAGCCGCCGTTGCGGGCCCCG
   CAAGAGCTTCCGCACACGCCACGCTTGTTACGATGAAAATCAACCAAGACAAAATC
   CGCGAAGTTATCGGTAAAGGCGGTGAAACCATCCGTTTCGATTACCGCTGAAACCGGTACG
   GAAATCAATATTGCCGAAGACGGTACGATTACCATTTGCCGCAACCACTCAAGAAGCCGGC
30  GATGCGGCGAAAAAACGCATCGAGCAGATTACTGCCGAAGTGAAGTGGGCAAAGTGTAC
   GAAGGCACTGTGGTAAAATCCTCGATAACAATGTCGGCGCGATTGTCAGCGTGATGCCG
   GGCAAAGACGGTTTGGTACACATCAGCCAAATCGCCACGAGCGGTACGCAATGTCGGC
   GACTACCTGCAAGTCGGTCAGGTGGTGAACGTGAAAGCATTGGAAGTGGACGACAGAGGC
   CGTGTCCGTCTGTCCATCAAAGCCCTGCTGGACGCGCCTGCCCGTGAGGAAAATGCCGCC
35  GAGTAACGCTTAGGGTGAAAGTGCCGTCTGAACAGGTTTCAGACGGTATTTTACGGGT
   ATCGGGAATGAATGGGGCTTACAGCCACAGGACGGCAAGTTTCATAATGCCATAATGA
   TACGGATAATCCCGTACACAGGCGGATATATCGGTTTTGCATGATTTTTTTCAGTTGCAG
   GGAAAAATGCCGATTGCTAAAAGATTGGGCAGCGTACCCAGTGCAAAGGCAAGCATATA
   TAACCCGCCCGTTGCCGCACTACCGCTTCCAGCGCGTAAAGCGACGCGCTGTAAACCAG
40  TCCGCACGGCAGCCAGCCCCATAATATTCCGACCGCAAGGCAGGCGGGTATGGATTTTAT
   GGGTAACAGCCGGTTGAGTATCGGGTTCAGGTTCCGCCATATCGGTTTGCCGATTTTCTC
   GATTTTTGCCGCAAGGAAGAAATACCGCTCAAGTATAAGCCTAAAAAGAGCAGCAGGAG
   GTTGGCGGCGGTATATAAAATATTCTGCAGGACGCGGGTTGGTCGAGTGAAACGCCGAC
   CTGTCCGATTAAATCCGAGTATCAGGCCGATTGCCGTATAGCTGCTTACCCGTCTGTGTT
45  AAGCAGCAGGATCAGCCAAAAGCGGTTGATATGCGGGGGGAGTTGGAGCGCAAACGCGCT
   GCTTAATCCGCCGCACATACCGATGCAGTGCGTTCCGCCGAAGAAACCGAGTAGGAACAG
   GGTGAGGAAAGTGATGTCGTGGTTCATAGGCAGTTGAAGTCAAATATTTTCGGGAAAA
   GGGATGATTTGCGGCAGTCCGGCACATAGGATCCGCCGAGGGCATTGCCCGTGCTGTAA
   AGTCTTGAATAAGGATGCAGTTTGCACCCTGTATTTGATAATTTTGTAATCCGCCCT
50  TTACTGCGCCGTCGGCGGGTTTGCCGTGTGCGTCAAAATACAGGATGGTGCGGTTTTGAA
```

5 GATGCGCGCAATTTGAAACGGCCGGGTTTGCCGGTATGTTTCGGGTGCAGGCGGCAAGGA
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AACAGTATAATGGCTGATTTTAACTCCTCAGGCGGCGGGAGATGGAAGCATTTCCTTCGG
10 TGCGGGGGATTTCGGATTTCGGAAGCAACAGACGATACGGGATTTCGGAACAATATGAACA
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GTCAGGATTTTACCCCCGAGGACGCGCCGATTGCGGAATGGGCGGACCGCTTCGGGGCG
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20 GTTCGCTTATCGAACCGCACAGGCAGTTTCCGAAACGCGTCAATGTCCGCTTATGCAGG
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30 TTTTCCCGTCAGTAAATGATCGATGACGCTTGCTTTTGTGCGAATATGTGCGTTGGTGCA
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30 GAAATCAGGAAAACGGCGGTAAAGCTCATAACAGGGACAAAGCGGCAACACGCGGAC
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30 GGTCTTGCGCAGACCATATCGACAAGCCGTTTTAAAAGCCGTTGACGGGTGTGGAAGTCGA
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40 CGGTTTGACCGGCTTGCTGCGATAGGCGGCAGGGGGCGGCGCATTTTCGGTGAAGGCGA
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45 CTTTCATCGGCGTATTGTTTTCTGTTGCTTCTCCGACAGTTGCGCCTTTTCCAACAGTTCGG
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5 CCAAAACGAACGGGCGTTCTTTGAGGCGGAACAGCGCGCCTATGCTGCCGATAAGCGCGG
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10 AACCGCGTTCGCGGCGCATTTTTTCATCTCGGCAAGGCTGCGGTTGAGGTATTCGATTA
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50 AAAATTCGTACTCGGCGGTATTGCCGCATTGGTTTTGGCGGCTGCGGCGGTTCCGAAGG
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 53>:

gnm_53

CGGAAAGAAGATCTCATATTTTCCTCAACAATAAACAGTCAGACAATTAGGAAATATACT
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5 CTCAAAGAGAACGATTCTCTAAGGTGCTGAAGCACCAGTGAATCGGTTCCGTACTGTTT
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10 TCATTCCCGCGCAGGCGGGAATCTAGTCTGTTCCGTACGGAACTTATCGGATAAAACGG
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20 GGCAGGAGGCATCAGGTGAGAACGTCATTCCCGCGCGCAATCCGCGCGGCGAACAGATT
TATTGGATAGGACCGGTGCGCGAAGTTTCCGATCGGGAAGAGGGAACGGATTTCCGGTGA
TGCGGCGCAGTTTCATTACCGTAACGCCGCTGCAATCGACCTGACCGCTATCCGGAC
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AACAAAAACAGTACGGCGTTGCCCTGCCTTAGCTCAAAGAGAACGATTCTTAAGGTGC
25 TGAAGCACCAAGTGAATCGGTTCCGTACTATTTGTACTGTCTGCGGCTTCGTCGCCTTGT
CCTGATTTTTGTAAATCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 54>:

gum_54

30 CCGACATGGAACCATCACCATCCCTAAAGAAAATTTGACGCTTTGCTAAATCTCGCAA
GAACCGCGTCGCCCTGAACGAAAATTTTATTCAAAAATAAATTACGGAGCATCCACCA
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35 CCTAATAACCTCTCTTTAAAGGAAAATCAAAATGGAAACCAAGAAAAGAAATTTGTT
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GcCATGAGTGAAGCGGTGCGTGCTGCTTGGCTACGGTAACAGTCAGAAATTAAGTTC
AAGCTCAAAATCCAACCCCAAAACATCCAAGCGGAACGGTAAAAATCAGCCACGATGTA
GCAACCAAACTGCCCAAAGAAAAACGCGAAGGCGGCATCGTCTTTGCTACACCTGACGGC
AACATCCAAGCCGACGATCCGGCACAAGGAAAATTTGAAACTCAAACAAGTTTCCAATACG
40 TCAAGCAGTTGAAAATGGTCAGATCCAATACTCAAAACACAAAGGAAATCTAAAATG
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AAATCACACCCCGAATTGATGCAAAACCCGTACCGCAAGTGCGGCAAAATTCCTCATGCAC
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45 ATTGATGCCGATTTCAATCAGGGCGTATTGATGTACCGCGCTCATCAATGGCCATACG
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50 TTCAAACAAGGCTATCGTGAACAGGACGGCAGAACTCAACTTTACCTTCCAATCCGAAGAC
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TTGAGCCGGACGGCTTCGCCCTGGAGAAACGCAAAGGTTGGCAATCCGCTCCGCGTGA
CTGGCAATGCGGCGGGATGCAATCCATTGGCTCATATTGGGGAGGGCTATCATCGCCATA
ATGGCTGCAATGACCATCAGATGAGCAGCTCTGTTAGCGTGAAACCTTGTGTTTTCGT
GTACACATAAGCAATAGAACGTTAACTGGTAATGTATCGTGGATTAAATCAAACAGTA
CGGCGTTGCCCTCGCCTTAGCTCAAAGAGAACGATTCTCTAAGGTGCTCAAGCACCAAGTG
20 AATCGGTTCCGTACTATTGTACGGTCTGCGGCTTCGTTGCCCTGTCTGATTTTTGTTA
ATCCACTATATTTCAATTATATGCGGGCTGAATGCAAAATGCCTCAAGACCGCGTTTT
ATTTTTTAGGGCAATCTCTCAGCATGATTTTAAACGATTTTGCTGATTTTCGCTAATAA
ATTTTTATATAGCCATTTAATCCTCTATCTTTGCCTCCTCGGGAATATAGGCAGCATTGT
CGAATTTGGTGAATTGTCCCGTCCATGTGAGGAAGATTTTACCGACGGGACCGTTGCGGT
25 GTTTGCCGATGATACATTGCGCAAGGCCTTTCATGGGTGAGTCTGGTTGTAGTATTTCGT
CGCGGTACATGAACATAATCAGGTGCGCATCCTGCTCGATTGCGCCGGACTCGCGAAGGT
CGGACATCATGGGGCGTTTGTGCGTACGCGATTTCGACCGTGCGGCTCAATTGCGACAGGG
CGATGATGGGGACTTGCAATCTTTCGCCAACGCTTTGAGCGAACGTGAAATCTCTCCCA
GCTCCGAAGCTCGGTTGTCTCGGAACGGCCGGATCCTGCCATCAGTTGCAGGTAGTCGATGA
30 CAATCAATCCAAGCTTATTGTTAAATTGACGGGCGAGACGGCGGGCACGGGCGCGCAGTT
CGAGCGCGGTGAGAACCGGGTCTCGTCGATGTACACGGGCGCGTCGGAGAGTTTGACGA
CTGCTTCGTTTCAGGCGACCCAGTGTTCGTCTTCGAGCCTGCCGTTTTCAAACGCTTT
GATCCAACCGTCCGACCGAGCCGAGCATACGCATGACCAGTTGCGCCCCGCCATTTCGA
TCGAGAAAACAGCAACGGGACGCTGCCTTCTACGGCAACGTGTTGCGCGATATTGATAG
35 AAAAGGCGGTCTTACCCATAGACGGACGACGGCAACGATAATCAGGTGCGCGGGTTGCA
GACCCGAGGTTTTTTTGTGCGAGTTCGATGAACCCCGTCGGCACGCGGTAATTCATCGG
GATTGTGCGCGGATAGAGCATATCGATGCGCTGTACGACTTCTTTCAGCAAATCGGGCA
TCTCCAAAAGCCCTGCTTGGATTGGCGGTGCTTTCGGCGATTGGAATACTTTGTTTT
CCGCTCGTCCAAAAGCTGCCCGCGTCCCTGCCTTGGGATTGTATGCGCTGCGGGCGA
40 TTTCCGTCCCACTTCGGCGAGTTGGCGCATAATGGAACGCTCGCGCACGATTTCGGCGT
AGCGGCGGATGTTGGCGGCAGACGGGGTGTTTTGCGCCAGCGTAATCAGATATTCGAATC
CGCCTGCCGCTTCCAATTCTTCGTTCCGCTGCAAATCTTCTGAACCGTAATCACATCGG
CGGGACGGCTCTCATTAATCAATTGGCAATGGATCGGAAAATCAGGCGGTGTTTCATGCC
GGTAGAAGTCTTACCGGAAACACATCGGCAATCCTGTCCCATGCCGATTTCAGCA
45 TCAACCCACCCAAAACGGATTGTTCCGCTCCATTGAGTGTGGGGGCGAGACAATGCGC
CGACCTACGGTCTTCAGACGGCATGGCTGCGTAATCGTTTCATGGTACATCCTATCTGTC
GTGCCGAAATTGCAATCTTCTATTATAGCGTAAAGCAGTTTAATTGGTTTCCGCACCGC
AAAACAGGTAGAATACACGGGTGCCGAGTTATTTGACGCAACACTGCCAAAATACAACA
TTTAAACAATATTAGGAGTACAAAATGGAACATAAGCTGCCGCAACTGCCTTATGAAC
50 TGGACGCATTGTCCCGCATCTGAGCAAAGAGACTTTGGAGTTCCACTACGGCAAACACC
ATCAAACCTACATCAACCAACCTGAACAATCAAATCAAAGGCACCGAATTGAAAACCTGC
CTTTGGAAGAGATTGTGAAAAATCTTCAGGCGGCGTGTCAACAACGCGGCACAACTT
GGAACCAACACCTTCTACTGGCTGGGTTTACGTCCAAAGGTCAAGGCAAACCTGCCGGCG
AACTGGCGCGCCCATCGACGCGAAATGGGGCAGCTTCGAGAAATTCCAAGAAGCGTTCA
55 ATGCTGCGCGGCGGTACTTTCCGCTCCGGTTGGGCGTGGCTGGTAAAAACCCCTGCCG
GCGGATTGGATTGGTTTCTACTTCCAACGCGCTACGCCGCTGACCACTGAAAACACGC
CGCTGCTGACCTGCGACGTGTGGGAACACGCCTATTACATCGACTACCGCAACAGCCGTC

-504-

5 CCAACTACCTGAAAGGTTTTTGGGAAATCGTCAACTGGGACGAAGTCGCCAAACGTTTTG
CCGCCTTGTCCTGATTTTTGTTAATCCGCTATATCATTTCGGGTAGATTTTTGCGGTATT
GAATTTTCAGTTATTTCCGATAAATGCCTGTTGCTTTTTATTCTAGATTCCCACTTTCGT
GGGAATGACGGTTCAGTTGCTACGGTTACTGTCAGGTTTCGATTATGTTGGAATTTTCGGG
10 AAACCTATGAATCGTCATTCCCGCGCAGGCGGGAATCTAGACCTTAGAACAACAGCAATA
TTCAAAGATTATCTGAAAGTCCGAGATTCTAGATTCCCGCTTTCGCGGGAATGACGGAAA
GTGGCGGGAATGACGGGATGTAGGTTTTCTTAACCTGCGTCCTAGATTCCCGCTTTTGC
GGGAATGACGGAAAGTGGCGGGAATGACGGTTTCGGGCATTCTTAAATTACCCGTGTATC
GCTGTAAATCTTAGAGATGGCGGAATATAGCGGATTAACAAAAACAGTACGGCAAGGCG
15 AGGCAACGCCGTACTGGTTTTTGTAAATCCGCTATAATTGATGAAACGGGTTAAAAAAGT
GTTGCCATCGCCTGTTCTTCTTGTGCGGATACGCTTAAATAAGACCAGCAAATAAATGGGC
AGGCCAATCAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 55>:

15 GNMAB42F *gnm_55*

15 TGACCCGGCATTCCCTTCCTGCCTGCGTTTCGTGGACGCTTTTTTCAAATTCGATTCCGC
CGTTTTCGTTTTTCGGGAACACGATTTCGCCGCGAAGATGAGAAAACAAACGTTTCACAAG
GTTTTCGTCCACGGCGAACAATTCGGTATCGCCTATCCTGCTTTTGCTGAAAATTCATG
20 GAGCAGGTTTTCTTTTTCTTTGTAATTGTGCGTTTTGACGGCGAGGATGCGTTCCAATCC
GGCAACGTTTCGCATAACCGTTGTTTTCCAATGGCGCATTCTGCCTTCAAATTTGCTTAC
ATCCGAAATGCCGATTTTATACACGCCCTTGATGACGGTTTTnATCAGATAGACAATGCC
TGACTTTTCCATATCGATGTTTTCAAGTGTTCGAGCCTTCAGACGGCATCGGATTAT
TTCTATGCCGTCTGAAACCGTTTAAAGTATCAAATATTATCGACACTCTGGCCTGTnAGCG
25 CGCGTTGGATGTTGCGGTTTCATGCGTTTGGCGGCGAAATnTCGGTGATGCTGCCGAGTT
TGCGCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 56>:

gnm_56

30 CCGCACTGATTTTCGCAAATCGGTACATATATCATCAGCGCGGGCGGCAAACGCCTGCGTC
CGATTATGACGATTTTGGCGGGTAAGGCGGTTCGTTATGATGACGAGAACTGTATTCGC
TGGCGGCGATGGTCGAGTTTATCCACACTTCCACCCTCCTGCACGACGATGTCGTCGATG
AAAGCGATTTGCGCCGTGGCGGGCAACGGCAACAATCTGTTTCGGCAATGCGGCGGCTG
TGTTGGTTGGCGACTTTTTATACACGCGCCCTTCAACTGATGGTTGCCTCGGGCAGTA
35 TGCGCGTTTTGGAAGTGATGGCGGATGCAACCAACATTATTGCCGAGGGCGAAGTCATGC
AGCTGATGAACATCGGCAATACGGACATTACCGAACGAACAATATATCCAAGTCATCCAA
TATAAACGGCAAAATTGTTGAAGCTGCCGCTCAAGTCGGCGCAATTTGGGCAAGGCT
TCCCCGAACACGAACGGGCGTTGAAAGACTACGGTATGTATGTCGTACGGCATTCCAA
ATTATTGACGATGTGCTGGACTATTCTGGCGAAACCGACGAAACGGCAAAAACCTCAGCGA
40 CGATTTGGCGGAAGGAAACGACTTGCCTTTGATTATCTGATGCGTCAGGGTTCGGAA
CA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 57>:

gnm_57

45 GGCTGCTGCGAGGAAGATGTCGGGGGCGGGTTTGAATGTGCGACGGCGGCAGGGTCGGC
AATGGCGTCGAAGAAGTGGGTTCAGCCCCATGCGTTCCAGCAGGAACGGGCGGTTTTACT
GGCGGACGCAAGGGCGATTTTTTTCGGGTTGCCCTCAATGCTTCCAGCAGGGGCAAAAT

GCCGGGATACACGTCTTCGGGTTTGACTGCCTGAATCATCTCGACGTAGTTGTGTTTTT
ACGGCGGGTCAGTTCGGCGAACTCGGCTTCGCTGACGGTTTTGCGCGCGTGCAGGAT
GCGTTTGAGCGAATCGTCGCGGACACGCCTTTGAGCTGCTCGTTAACTTGGGTCAAT
GCTGATGCCAGTTCTTCGGCGAGCTTTTCCATGCGCGGTAGTGGTATTCGGCGGTGTC
5 GGTGATGACGCCGTGAGGTCAAATAGGACTGCAGTGAAGTCATTTTGGCCCTCCTTA
TTTTTCCAACGCAACGGTGTGGCTGCCGTGAGCGTGATGCTTTGCCGTACACCTGCAA
ATCGAGCGACTCGCCTTTGAGCAGAGTGAAGACGACGTTTTCTTTGCCGACGGCGACTTT
AATCAGACGGCCGCGGTAGTTGATGTGGAAGGCGTAGCCTGTCCACGCACTCGGCAGGAA
CGGTGCGAAGCTGAGTTTGCCGCCAGGTTTTCATTTGGGCGAAACCTTGACGATGGC
10 GAGCCACGAGCCGGTCATGGAGGTGATGTGACGGCCGTCTCGGTGTGTTGTAGTT
GTCCAAGTCCAGGCGGGCGGTGCGCTGGTACATTTCCACGGCTTTTCTTCTTTGCCAG
TTCGGCGCGGAGAATAGAGTGAATACAGGGCGACAGCGAGCTTTCATGCACGGTCATCGG
TTCGTAGAAGTCGAAGTTGCGGCGTTTTTTCGTGATATTGAACGGTCGCTGAAGAAGTA
GATGCCTTGCAATACGTCCGCCTGTTTGATAAAGGGCGAACGCAAGGATTTGTCCACGA
15 CCATTTTTGGTTGAGCGGCAATCGTCGGGCGAAAGCGCGGACACGGGGCGGATGTCTTT
GTCGAGGAAGCCGTGCTGCTGCACGAATACGCCGAGTTCTTCGTATGCGGACGGTACAT
ATTCGCGCTGATGTCCGCCCATTTTTCCAACCTCGTCGGCACGACGTTCAAATCCGGACG
CGGGTATTTCCGCAAGGCTTCGGGGGTAGTCCAATACCCATGCGGCGAGGGTGTGGT
GTACCAAGTTGTGTTGATGTTGTTTTCGTATTCGTTCCGACCGGTACGCCGTGAATCAT
20 GTATTTGCCGTTGCGTTTGGAGAAGTGGACGCGGTCCGCCAGAACGGGGACACTTCGAC
CAAACTTCCAAGCCTTCTTTGGCAAGATAGCCCTCGTCGCCGGTGTAGTTGGTGTAGTT
GTAGATGGCGTAAGGAATCGCGCCGTTCGGGTGGATTTCTCGAAGGTGATTTCCCATTC
GTTGTGGCACTCGATGCCCGTAACGTTACCATCGGATAGAGTGCGCCGCAAGCCCTG
25 GGTAACTTCGGGTTCCGCCAGTGCAGGTAGAGCGGTACGGCGTAGGCTTCGGTGTCCCA
ATAGGTTCGCCCGCCGTATTTTTCCGCCGTAAGCCTTTCGGGCGGATGTTTCAGTCGCGC
GTCTTCGCCGTAGTAGGTGGAGAACAGTTGGAACAGGTTGAAGCGGATGCCCTGCTGCGC
TTCGTGCTGCTTCGATGACCACGTCCGGCGATTTCCCAACGGTGCAGCCAGCCTGCTTT
GTGCGCGTCCAGCAAGGTTTCAAACGCAACGCCTGCAATTTTTCCGACAAGGCGCGGCC
30 TCGCGCTTTCAGTCTTCAAGCTCTGATAATCGCGGCTGGTGGTAACATCACGCGTTT
TTCAAAGGTTTCGGGTGTGCTGCCGACTTCGGATTCAAAGAATTGGAGACCTGCCAGTC
GGTTTGGCTGCCGCGGAGGGCTTTGAAGCTGCCGGCAAAGGTTGCTCGGCGTTGACGAT
GAATTTGTTCCACGCCGAAGGGATTGGCGACGTTTGGGCGGCAATGTAGGAGAGACTGTC
TGAAACGCCTTTGTCCAATACCTGCCAGAATTTTTCTTCGTAGTTGGAGTCTTCGTTTTT
35 CACGTCCGCGATCGATGATGGAATCGATCGCGACTTGGTGGGTTTTACCGTCAACGGATAC
GGCTTCCAGCGGATGACCGCCAGCTCTTTTGTGCGACAGACAGGAATTTGCACACATT
GAAACGCACACCGAATACGGTGAACGAGCGGCGCAACACGCCGTGCTGCATATCGAGTTC
GACGGAGAAGCCAGCAACGTCGTTTTTCGCCAAGTCCACTTCTGCCCGTCGACAAAGAT
TTTGACTTTGCTGAAATTGAACGCGTTGATGGCTTTGCCGAAATATTGGGATAGCCGTT
40 TTTCCACCAGCCGACGCGGTTTTGTGCGGGGAACACACGCCGCGATGTAGGTGCCTAA
GTGGCTGTCCGGGAATAGGTTTCTCAAAGCTGCCGCGCATACCCATATAGCCGTTGCC
CAAGCTGGTCAGGCTCTCTTCAGCCGTTTGTGTTCTTTTTCCAGTTTTGCGGAACGCAG
CGTCCAAGGGCTGATTTCCATGATTCTTGTGTACATTTATGAAGCTCCTGTTTGGATTGA
TTTGAGGGGAATGGTGAAATCTTATAGTGGATTAACAAAATCAGGACAAGCGACGAAGC
45 CGCAGACAGTACAAATAGTACGGAACCGATTCACTTGGTGCTTCAGCACCTTAGAGAATC
GTTCTCTTTGAGCTAAGCCGAGGCAACGCCGTACCGGTTTTTGTAACTACTATAAAAA
GGTCGCTGCGAACCAGGTGTTAGGAAGCTCCTAAGAAAGGGATTGATGCCGTAAGCAATC
GTCGCCTCCCTGGTATCACCTTGTTCAGACGAATATTGCCGAACCTCGGGCCAATTCAGG
CTGTCCGGGACGGTCTGCCCTCGGTGCCAGCGCGTGTAAACGCCCGCATCGTGCCGC
50 GCGAAATCCTGCCGGGCGGCGGTAAAGATGACCAAGCCATTGCCGTGCTGTATATGCTG
ATACGACGGCGCGTCCGGCTTGCAACACAGCGGCGGGACGGCTATATCGGACGGCACG
CGGTAAGCGTCGTCAAACCGGCGCCGACCCGTTTCGGCGCGCAGGGCGGCAACGGCGGCA
TCCAGCGGCTTGGGCGGCTGAAATCAAATACTTCGAGGTCGTCTGAAACCGTTGAGACG
GGCAGTTTTTCGGCATCGGCCGGCATATGTCCGCCCTGCGGAATATGCAGAACCGCATCG
55 TGCAGGCCCGCGTCCAGCGCCAGTAAATGTGCAGCGTCGGGTGCAACACCGTGTCCGCC
AGCGCGGTGGCGCGATAGCTAACGGTAAGCCGGTCGTCTTCGTCCAAGCGGTAGGAAATA
TCCAAATCAAATCGTTGGGATAACCGTCGGCCGACTGTTGCAGGCGGCTGCGCAGCACC

ACCGAACGGCCGCTCTGCCGCCACCGCGTTGAAACGGGTAACGGCCAGCCCGTGCGAACCG
CCGTGCAGCGCGTTCTCGCTTCGTTGGCCTCCACGCGGTAAGTCCTGCCGTTGATGTCG
AACGCCGACCGCGGATGCGTCCGCGCCACGCGCCCTATCTGTTTGTAACTGAAACGGA
5 TTGTCCGCATAGGAAGCCGCATCATCGAACGACACCAGAGGTTTTCGCGCACGCCGTCT
GCCAAAACGGAATAATTCTGCACAATCCCGCCCAAGTCCAGCACGCAGACACGCGTACCA
CGCCGTTTGGACAGCACATAGCCGTTACGGCACGCCCGTCGATCAGACCGAAATCGCGG
GTAGCGGGGGTATCGCTCATCGCTCAAACCCCGCGTGTGTTTCTTAATCAGGAACACG
GAAAACGCGCCAGCAGCAGGACGACGCCCCCTACCAAGAACATAGTGGCCTGCAAGCCG
10 CCCAGCATAGGAAAAGCACGAACTCAACAGCGAAGCGACGATTGAGGCATACAGATA
GAGCCGTTAAACAAGCCCAAGTAAGTGCCCATATGCTTGCCCGACAAGGCGTTGGTCACA
ATCGTCAGCGGATAAGTGATAATGCCCGCCCAAGCGATGCCGATTAAAGGTATAAGACAAC
ACCAGCGCGTATTGGTTGCCGATGAAGAAAACGGAGAAAAGCCGAGCGCGCCCAAGCC
AAACAGCCGAAATAACCCGCCTTATGGTATTTATTCGGCACTTTCGCCAATACAAACGAA
CAAATCACCGCCGCAACCGACTGCACCGCCGCCAAAACGCCGTACCAAGTACCCGCCTCC
15 TGATAACCTACGGAAGACGCATCGGTGGTGTGCCAGACGTTTTCCGCAATCGCGCCTGCC
GAGTAAGTCCACATATATTGGAAGGCGAACAGCAGAAGAATTGCACCAAAGTAACCGTC
CAAAACGCCCTTAGCGCGGTTTTCAAGAGTTCGATCCAGTTGGCTTTTTCTGATTCGCG
CGACATCGATGCCGTGGTAACGGCGTAGGTTCCGGATCGTATTCCTTCACTTTGAAA
ATCGTGAACGCGCTGGTAATCACCAGCAACGCCGACCCACATAAAACGCCACGACCACG
20 GTCTGCGGCACAACGCCTTTCTCGCGGTTGTCGCCAAACCGATATACGCAAACACAAAC
GGCAGAATCGCCGCCACGACCGCGCCCGTATTGCTAAGAACTTTGAATCCCGTAGGCG
TAGCCTTTCTGCTCCTCGTTGACCATGTGCCGACCATCATCTTAAACGGCTGCATCGCC
ATATTTGACGACACGTCTAACAGCGCAATCATCAGCGCGCCGAACGACAAAGCCGCCAGC
GACGCATAGCCGAAACCGAAGCTGCCCGAGTTCGGCATCAAATCATCACAATAACCGCA
25 ATCAGCGTGCATAAAGCAGATACGGCAGACGGCGGCCGCCAAACGCGGCTTCCAAGTG
CGGTCCGAGTAATGGCCGACAAATCGGCTGCACCAGCATCCCGCCAGCGGCGGCGAGGATG
AAAAACCAGCCCAAATTGTGCGGGTCTGCGCCTAGCGTTTGAATAATGCGGCTCATTTGC
GAGCTTTGCAGGGTAAAGGCCGCTGAACGCCGAGAAAGCCGAAACTGAGCATCCAAATC
GTGCTTTTTGCCAGCGCGGGCAAACCTTGTTTGTCTGTTGAGGCGTATATTCCGACATA
30 AGGTAAATCCTTTTTTGAATTTGAAAAGTATAGTAGATTAACAAAAACAGTACGGCGTTG
CCTCGCCTTAGCTCAAAGAGAACGATTCTCTAAGGTGCTGAAGCACCAAGTGAATCGGTT
CCGTACTATCTGTACTGTCTGCGGCTTCGTGCGCTTGTCTGATTTTTGTAACTCCACTA
TATTTGCTTTGGAATAATCCGAAATGGTTGCGGGGCGGCGATCCCTATCATTATTATTT
TTTTGTCTATATAATTTCAAAGGGATAAGCGGATTTTATGAATCCTGCCGATTTTGGCA
35 ATACCGGTTCCGGGATAAACTGGCTTAAATCAAATTATCGGTTAAATGGCCGCTGAAA
TTTGTGTTGATGAAAACGAGAAAACCATGTCCCAACAATACGTCTATTCTATGCTGCGCGT
GAGCAAGGTTGTGCCGCGCGAGAAAACCATATTAAAGATATTTCCCTTTCTTTCTTCCC
CGGCGCGAAAATCGGCCTGCTCGGTTTGAACGGCGCGGGCAAGTCCACCGTGCTGCGGAT
TATGGCGGGCGTGGATAAGGAATTTGAGGGCGAAGCCGTGCCGATGGGCGGCATCAAAT
40 CCGCTACCTGCCGCAAGAGCCTGAGCTTGATCCGGAATAAACCGTGCAGGAGGAAGTGA
AAGCGGTTTGGGCGAAGTGGCTGCCGCGCAGAAACGTTTGAAGAAGTGTATGCCGAGTA
CGCCAATCCTGATGCGGATTTTGACGCGTTGGCAGAAGAGCAGGGCCGCTTGAAGCGAT
TATTGCGGACAGTTTCGTCCACGGGCGGCGGTGCGGAACACGAATTGGAATCGCCGCCGA
CGCGCTGCCCTGCCGGAATGGGATGCCAAAATCGATAATTTGTCCGGCGGTGAAAAACG
45 CCGCGTTGCCCTGTGCAAACTCTTGTGAGCAAGCCGATATGCTTTTGTGACGAGGCC
GACCAACCACTTGGATGCGGAATCGGTTCGAGTGGCTGGAGCAATTTCTCGTGCGCTTCCC
CGGCACAGTCGTTGCGGTAACGCACGACCGCTACTTCTCGACAACGCCCGCGAATGGAT
TTTGAACTCGACCGCGGCCATGGTATTCCGTGGAAGGCAATTACTCGTCTTGGCTGGA
GCAGAAAGAAAAACGCTTGGAAAACGAGGCAAAATCCGAAGCCGCGCGGTGAAGGCGAT
50 GAAGCAGGAATTGGAATGGGTGCGCCAAAATGCCAAAGCCGCCAAGCCAAGTCCAAAGC
GCGTTTGGCTCGTTTTGAAGAAATGAGCAACTACGAATACCAAAAACGCAATGAAACGCA
GGAAATCTTTATTTCCGTTGCCGAGCGTTTGGGTAACGAAGTGATTGAATTTGTAAATGT
TTCAAATCGTTCCGGCATAAAGTGCTGATTGACGATTGAGCTTCAAAGTGCTGCGGG
CGCGATTGTGCGGATCATCGGCCGAACGGCGCGGGTAAATCTACGCTGTTCAAATGAT
55 TTCGGGCAAGAGCAGCTGATTCCGGCGAGGTGAAAATCGGACAAACCGTGAAAATGAT
CTTGATTGACCAAGCCGCGAAGGTTTGCAAAAACGACAAAACCGTGTTCGACAACATTGC
CGAAGGCCCGACATTTTGCAGGTTGGTCAGTTTGAATTTCCCGCCCGCAATATTGGG

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5 GCGTTTCAACTTCAAAGGCAGCGACCAAAGCAAAATTGCAGGTCAATTGTCTGGCGGCGA
ACGCGGTCGTCTGCACCTTGGCAAAAACCTTGTGAGCGGCGGCAATGTATTGCTGCTGGA
TGAACCGTCTAACGACCTTGACGTGGAAACCCTGCGCGCTTGAAGACGCATTGTTGGA
ATTTGCCGGCAGCGTGATGGTGATTTCGCACGACCGTTGGTTCCTCGACCGCATCGCCAC
10 GCATATCTTGGCGTGTGAAGGCGACTCTAAATGGGTGTCTTCGACGGCAACTATCAGGA
ATACGAAGCCGACAAGAAACGCCGTTTGGGCGAAGAGGCGCGAAACCGAAACGCATCAA
ATACAAACCGGTAACGCGTTAACCTCCGAAACAATGCCGTCTGAAAGGCTTTCAGGCGGC
ATTTTACAAGGCAGCACCGTTTAAACAGCATTGCAATCCTCAAGACAATCAAAGTCAT
CACCAGCGCCGATATCGTCCGCCATAATGCCAAACCGCGTGCAGATTCTTGTCAA
15 CCAACCGACGGGAGACGGTTTGAGCGCGTCAAACAGACGGAATAGGACAAATGCCGCCAG
CCACCAGCTCCACCTGAACGGCACAAACGCCAGCACAAACAGCATGGCGACAATCTCGTC
CCAAACAATCCACCGTGGTTCGCTGACACCCGTTTCACGTTCCGCATAAGCGCAAATGCG
TATGCCCCACATAAACAGCACGATACACAAAAAGCCAGCAGTAGCCCGTCTATGCCGAG
CAAAATCAGCACAAACGCCAAAGGCAGTCCCGCCAAAGTGCCGAATGTGCCCGGCGCGAA
CGGAGCCAGCCCGTCCCGAAACCGAAAGCCAAAAACACAACGGCCGTTTCAACAGCCA
CGCAAAGTCAGGTTTAAATCAGCCAAATGATCGAATC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 58>:

GNMAB61F gnm_58

20 CGGTCTTGGCGCACGCGCGnTCTTTCGGCATACATCACGCCCAAATTGTTTTGGGCTTGG
GCTACCCCTCGCTGCGCTGCCGCTGCCGAAACCATCTGACCGCTTCGACATCGTCTTGGCGC
ACTCCACGTCTTTCGGCATATATCACGCCCAAATTGTATTGGGCTTGGACAACCCCTGC
GCTGCCGCTGCCGATACCATCTGACCGCTTCGGTATCATCTTGGCGCACGCGCGCCCGT
TGGCATACATCCAGCCCAAATTGTATTGGGCTTGGGCTAACCCCTGTTCCGCCGGCTGCC
25 GATACCATCTGACCGCTTCAGCATCATCCCGCGCACGCGCGTCTTGTAAATACATTGC
GCCCAAATTGTATTGGGCTGCTGCATTTCCCTGTGCTGCCGCTGCAAGTTTTCCGAAAA
TCCGATACGTATCCGnCCACACCGGTCCGTTCAAGCCCAAGGCAATCAGGGCGCGGCA
AGCATTTGACTGTCTGTTTCATGGTTTnACTTCTGTTTTAGTATAAGGCGGGTTTCAGCC
ACCGnTAACGATAGGGCTGGGCGGATT

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 59>:

gnm_59

35 GTACCTGCTCAAGCAGTACAATCCCGAGTATTCGGGCATTTTCATCATTTTTTAAGACAG
GAAGGGACTGATTGTGAACAAGTCTGAATTGATCGAAGCGATTGCTCAAGAAGCCGAsAT
TTCCAAAGCCGCCGACAAAAAGCTTTGGATGCCACTACCAATGCAGTAACCACCGCCCT
GAAACAAGGCGACACCGTTACTTTGGTCCGTTTCGGTACTTTCTACGTGGGCGAACGTGC
GGAACGCCAAGGCGCAACCCCAAACCGGCGAGCCTCTGACCATTGCCGCCGCAAAAC
GCCTAAATTCGCGCCGGCAAAGCTTTGAAAGACGCACTGTAAGCCGTTTTTTATGAAAA
AAGCCGATTCTTTAAAGAATCGGCTTTTTTATCGGTCCACATTATTCTGATTCAAATCG
40 GCAACACACTGCTTGTACGTGCTTCAAAGGCATTTCGCGCCGCGAGCAGGTCAAGCTGT
TCTTGTGCGCCGAGTTTGCCGAAGGATCTAATCTGTTTCTCGCTCAATCTGTCCAAAGGC
TGCTCCACATACATTGTCAGTAGTCGACGGCGAGGCGGTATTGTTTGAATCTAAACCG
CGGGCCCGCAAATCGTTTTCGCAATTTTCGGCAAACGGAATATTCTTCACGCAAGACTCG
ACAATTTCTGTTTTGCCTGCGGTTTGGACATCGCGCATTTGGGAGAGCAGGGCGGTTAA
45 GCGAGCAACGCCAAATGACCCACGCCCAAATGCGGATGGTGCGGATTTTGGCTTTTGCT
TTTTTGCGCGCGCAACCTGCTCTTTCGTCAGCATTTTCGTGTTTCGGCTCAGTCATGCAG
GCTTTCCATGCGGATCATGGTAATCGGTTTTTCCACGCAATCCAGTGCTTCGATGGCTGC
GATTGCCGACTTGATGTGTTTTTCGACCGTGTGTGGGTGAGAATCACGATTTCCGCGAGT
GGTCTGATCAATCACGCCTTTTTGAATCAGTGCTTCGATGGACACGTTTTCTGTGCCAA
50 CAGCGCGCGGATTGCCCCAGCGTCCCGGTTTCGTCTTTGGCTTGGACGCGCAGGTAGTA

GCTGCTGGTAATTTTCGTCCATAGGCAGGATGGTTTGGCGCTTGGACTTGGCGGGGTGGAA
CGCCAGATGCGGTACGCGGTGGGCGGTATCGGCTTCAACCAGGCGGGCGATGTCGATGAT
ATCGGCAACCACGGCGGAAGCGGTTCGGCAATGCGCCCGCGCCGCGTAATATAAGGT
TTTCGCCAACCATATCGGCGTTGACGCGCACGGCGTTCATCACGCCGTTGACGTTTGCCAA
5 GAGGCGGGCTTTCGGGAATCAGGGTAGGGTGGACGCGCAGCTCGATGCCTTTGCCGGTTTT
GCGGGTAATGCCAACAGTTTATGCGATAGCCAAGTTCTTCGGCGTATTTGATGTCGCG
GCTGTCGAGTTTGTGATGCCTTCGAGGTAGCAGCGGAAAAGTTTCATCGGCGTGGCGAA
TGCCAGTGCCTCATGATGGTGATTTTATGGCCCGCATCGTTGCCTTCGATGTCGAAGGT
CGGATCGGCTTCGGCATAACCCAATGCCTGCGCTTCTTTTTCAGTACATCGGCAACGCGCT
10 GCCTTTTTTCGCGCATTTTCGGAGAGGATGAAGTTGCTGGTGCCGTTAATAATGCCGGCGAT
GGATTTTAACTGTTTTCGCCCAAACCTTCGCGCAGGGCTTTGATGATTGGGATACCGCC
CGCTACTGCGCTTCAAATTCGACGATGACGTTTGTGTTTTTCGCCAGCGGGAAGATTTTC
GTTGCCGTTATTCGGCGAGCAGTTTTTGTGGCGGTAACGATGTGTTTGGCGTTTTCAAT
GGCTTTCAACACCGCATCTTTGGCAATGCCGTTACCGCCGAACAATTCGACGACGACATC
15 GACGCTTCACGTGCGACCAAGTTTCGAACGGATCTTTGACAAAGGCTGGGAGGGGCGAGGT
TTGTGCGGCTTTTTCTTCACTCAAATCGCACACGGCAGAAATACGGATTTTCGCGCCCCAA
GCGACGGGAAATTTCTCCGCGTTGTCCCGCAACACGGCAGCCGTACCGCGCGGACCGT
ACCCAAACCTAAAAGACCGATGTTTACTGGCTTCATTGTGTCTCTTGTGAAGCCGACTGA
AATGTAATATTTGAAAGACGAAATATCCGTGCGCATATAATTTGTGCCGCACTTTGAAT
20 CAAATGCCGTCTGAAATCGGCAGGCGGGTCAGATGAAATCTGCCAATCCTACATGAATTT
GTCTGATTTTGCATCCCTTTCGGTGTAGATGATGCGGCAACGGGGTAAAAAATGTTGTT
TGAAGAAAATCCGATAGACGGACAGTTTGCAGAAATATGAATGCGGTGCGGGCGGAATCCG
GCTGGCGGGGCAAAGTTTCCATAAACCCGTGCTTGTACATAAGGATTGCGTCTGCCTGTC
GCAATGCCGAACCTTGTCCGATCTGACTCCGGAACCTGTTGTCCGACGTCAAACCTGT
25 TGACTATCCGGAATATTGATTATCGGGACGGGCGGGCTCAGGAGTTTATCCATCCCAA
AATCATGCGGATTTTTCGGAATCGGAATCAGCGTGAATGCATGAATACCGATTTCGGC
ATTTCAGGACATTGGTTTTCTGCACTCGGAAGGGCGCAGGGCTTGGGCTTGGCTTCAGCC
GTAAATTTCCCGTTTCAGACGGCATCGGCACTGACTTTTCAGGTAAATACGGGCTTTTCC
CGCCCGACGATGTTTCCGTTATGATTGAAATCAAAAACCTCACCTGCAACGCGGTTTGA
30 AAGTCTGCTCGACAAAGCAACGCTACCGTCAATCCCGGTACGCGCGTTCGGTTTGTATCG
GCAAAAACGGAACGGGCAAATCGAGCCTGTTTGCTTAATCAAGGGTGAAATCACTCAGG
ACGGCGGGCATGTCTCGATTCCGAAAACTGGCGGCTCGCTTCGTTTCCAAGAAACGC
CCGATTTGGATATTTTCGCTTTGGATTACGTTTTCAGGGCGATGCCGAGTTGCAGGCTT
TTTCAGACGGCATTGAGGCAAGCAGAAAGCGCAAAATGACGGCATGAAGCAGGCGGAATATC
35 ATGCTAAATTTGGAAGAAATCGACGCTTATACCGCGCGCGCGTGCAGGCAAAATGTTGA
ACGGGTGGGTTTTTCGCAAGAAGAACACAGCCGCCCCGTCAAATCCTTTTCGGCGGCT
GGCGTATGCGCCTGAATCTGCGCAAGCCCTGATTGCGCGCGCGATTGCTCTTGCTTG
ACGAACCGACCAACCACTTGGATTTGGAACCGCTCTTGTGGCTGGAACCACTTGTCTT
CTTTACCTGCACGCAATCATATTTCCCATGACCGCGATTCTCAACGCGGAACTA
40 CCCAAACCATTTGAATTATCGCAGCAAACTCAGCAATACGGCGGCAATTACGATTTT
ACCAAAACGAACGTGCGCAGCGTCTCGCGCAACAACAAGCTGCCTATGTCAAACAGCAGG
CGCAATCAAACATTTGCAATCCTTTATCGACCGCTTCAAAGCCAAAGCCACCAAGCCG
TTCAAGCGCAAAGCCGATGAAGGCTTTGGCGAAGCTCGAACGCATCGCTCCCGCGCATC
TGGACAGCGAGTTTTTCCTTTGAGTTTTTACCATCCCGACCATCTGCCAATCCTTTGTAA
45 AGCTAGAACACGCAGATTTGGGTTACGAAGGCAAACTGTTTTGCACGACATTACCTGT
CGCTGGAAAGCGGCGCGCTATGGTTTTATTGGGTGTCAACGGCAGCGGTAAATCTACCT
TTATCAAAGCTTTGGCAGGCACAATCGATTACTCTCCGGCAGCATCGTCCGTTCCGAAA
AACTCAATATCGGCTATTTTGCCTAACCACTCGATACCATCCGCTCCGACCAAAACC
CTGTTTGGCATATTTCAGCAGCTTTCTCCCGAAGTACGCGAACAAGAAATCCGAAATTTCC
50 TCGGAGGCTTCAATTTTGTGCGCATATGGCGTTGCAGAAAACCGAACCTTTCGGCG
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AAAGTTTCAAGGCGCCTTAATCGTCTGATCGCACGATCGCAGCTGCTTGAAGCCACGA
CCGACAGCTTCTCTGATCGATAAAGGCGCTCTGAAGAACTTCGACGGCGATTGAAACG
55 ACTACCGCAATGGCGTTTGGCACAGGAAAACGCGCGCTCGCGCCGCGCAGCATCCGCAC
AAAGCCAAAGCCGAAAGACACCAAGCGCATCGAAGCGCAATCCGTGAGGAAAAGCCCC
GACGCGCAAGCCGATACAGCAGAAATAGACCGTGCAGAAAAGAAATGGCGCAGCTTT

CCGAAATTGACAGCGCATGTGAAGCATTTTTAGCACAGAAGAAGCTTACTTCGAGGAAA
ACAAAGAAAAATTGCAGGACACCTTATCCGAGCTGGCAAAAGTCAAAACACAACCTTGCCC
AAATCGAAGAGGTTTGGCTGGCTTGCCAGAAGAATTGGAACAGATTGAAACTGAAATCG
AGAAACAGTTTGGCGAGCGATAAAGAAGCGCGGGCAGGGTGCTTATCTTTGCCTGCCAAT
5 AACGGTATAATTGCGGCGTTATCACCAGCTTTTACCGGTATAAACATCAGACTTTTTGCC
GCCTTGGGTCTCCTGTCCCTTTCCGGCGCGCGGGCGCAAGCCTCCGTATACCATTGCAAC
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CCTAAATCAGCAGCCATCAGGGAGGCGGATACCGCCTGAAATTAATAAACTCAGTTAA
10 GAAGCCAAAATACACATAGAAAGTAAAAAGAAAAACAAAAACCTGCCGGGAAAAAGAAC
AAGCAGGCTGCCAAAGCCCCGAAAGAAATCAAAAGCAACCAACCGAAAAGAAAAGCCCG
TAAACGCCCAAGAAAGCATTACAAAAATACCAAAAAATCAATGATTATCCGAAAATCA
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CATTGGGTGCGAATGCGGCCAAAATCTACACCTGCACAATCAACGGAGAAACCGTTTACA
15 CCACCAAGCGTCCAAAAGCTGCCACTCAACCGATTGCCCCCAATCGGCAACTACAGCA
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AGGTTGTCAAATATAAAGCCCCGGTCAAAACAGTATCCAAGCCGGCAAAATCCAATACGC
CGCCGCGCAACAAGCACCCCTCAAAACAACAGCAGACGCTCCATTCTCGAAACAGAATTGA
GCAACGAACCCCAAGCATTGGTTGAAGCCCCAAAAATGTTATCACAAGCACGTCTGGCAA
20 AGGGCGGCAACATCAACCATCAAGAAATAAATGCATTACAAAGCAATGTATTGGACAGGC
AGCAAAATATTCAAGCCCTGCAAGGGAACTGGGGCGTATGTAAAGCCGTGTTTTCAAT
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CGGCTGCCTGTATATTATATTGAAGGTCAACGTATTTCCCAATACCGGCTGGATGGAAGC
GTGCAAGGGATGCAGGGCATGTCTTCAGTACCTTCGGATACGCGGATGCTCCGGGCTA
25 TACATTGAGCGCATTTGGCCATCTTTAATTTTCTACTTGGAAGACCACAGGGACACG
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TAACTCCAAGGCATTAAGCTGTTGTTGATGCTTTGCCAGTTTGGGAGAAAGTTGTCCAT
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GACGTATTAAGCGGTGCGGACACCCGAACCGCATCCCTAAATGTCTTGGTGGGAATTT
30 AGGGGATTTTGGGGAATTTTGCAAGGTCTCAAAACCGCTCGCCTTATAGCCTGTCTGT
GCTGCCATTTACGCTCCAAAACCCATATTTCAAGGTGGGCATTGACTTTGCTTTGCCA
CTTTTCCACTTCTCGGGCAAGCTCGGCCATCGGGCTGCGGTAGCGGTCTTCAGCGTGT
CAAGCGGCTGATAAGCTGCTGAATACTGTTTTCCAAGCGATTTTCGATTGCGCTTTGTAA
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35 AAATTGTTTGAATACGGCAAGGTTTCAGGGCTTCGATTGCGTTTTGACTGCGTCTTTTCG
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TATGCGCTTTCTTCCAATGCGGTTTTTCAGAAAGTTTGGCGGAAAGTTTGCCTTTGCATC
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GTAGCGCGGGCAACAGCTCGGGGGCGATGACTTCGCTGCGGTATTTTTGCTGATGCG
40 CTTGGTTTTGGCTTTGCTTTTTGTCGGTTTCGGTTTCTCAAAGACGACGTCAGGTT
CGCGGCTTCATCGCTTTCTTGGTGATTTTCGGCCAGGTTTTTAACCGCCTTCAGCCATC
TTGGGCGATGAGATAAACATCGTCTTGCAGGGTTTCCGCCAGTAGTCCGTGAGGATTTG
GTAGAAATCGTATTCTTCAATCAGGCTGCCGGGTTTGAACCGGTCCAGCAGGCTTTCGCT
CCATTTCCGGATAAGCCTGCCCGGTTGGATGGCGGCAAGGTCGTTTTGAGTGTGCCACGC
45 GGCAAACTTTGCTAGGTGTCGGCTTTGAAGCGGCGTAATCGGGGTGCGCAATATATG
GGCTTTGATTTGGCTGCTTTTCGATTTTATAGTGGATTAAATTTGGGGCTGTACTAGATTA
GCCCTAAATTCACACCAATCCCGCAGGATTTAAGCTGTTGAGAGTGGGAAAGATTTC
AATCGATTCCGTTGTATAGTGGTAAAGTGGCCATCGTGTTCGGCAACAACCTCGTTTTTC
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50 CCATAAAGATAGATAGGCGGCGAGATTTGTCAGGTCTTCGACTTCTCCGCTGTGATATA
GCGAGGCAGATTAAGGTTGTAATCTTGTGCTGCGATTTCGCTTAAATGCACCATACGGCT
GTAACGAGGTTTGTGAAAGTGTGATGATTTTGTGAATGTCTTGTGCTCAGCAGACGGTT
TTGTTGCCGTCTTTAATGAAGCCGCGGATGCGTCAATCATAAACACGCTGCCGCGCTG
ATAACTTGGTTTGTTCCTCTTCGGCAAAATGGGCGGTTTGGGCGTGTCTTTGTGATG
55 ACGATGATGCAGGCAGGAATGCCCGTGCCGTAAAACAGGTTGGCAGGCAGCCGATAATG
CCTTTAATAAGGTCAAGGTTAAGCAATTCGTCGGAATACGCGCTTCGGCATTGCCGCGA
AACAGCACACCGTGCGGAAGAATAATCGCACCTTTGCCGCTTGGTTTCAGGCTTTTGAGC

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AGATGCAGCAAAAAGGCGTAATCGCCGTTTTTTTCGGGCGGGATAAGGCGGATTGGCAAC
GGCAAAATCGAAGGTCTTAAGCCCGTCGTTTTTCATCACGGAAAGACGAATCGGACAAGTG
TTCCCGTGTTGATTTCGGCGGTTTCGTTGTTGTGCAAAATCATATTCATACGG

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 60>:

gmm_60

CTGAGCGCGGAAATGGCTTTCAGACGnCATTTGCGCTCAATAATAATATCCCGCGnTCAG
AATACACGGTTTGGATGCGCCGGTTGCTTTGTGCGGACTACCGGGAATGCGATTAATCCA
10 ACACGCCGCCAACCACGCAATnCGGCGGCTTCCACCCATTGCGGATCGAGGTCAGGTC
GGCGGTGCTGTGCAGGGAACGCGTGTGCCGAAACATTCTGCCAAATCCGCCATTAAAC
AGGATTGCGGATGCCGCCGTCGCAATGTACATTGACGGGCATCTGCCGCTGCGTGTGA
GACGGCGTCGCAACGGTTTGC GCGGTAAACGGGAAAGCGTCCGCAATACGTCGTATCG
GTTTTCGCCCGCGTCAAGGTAGGTTTCGAGCCAATTTATGGCAACAGTTCGCGCCCCGT
15 GCTTTTAGGGTGGCGTTGTGCGAAATACGGGTGGGCGAGCAGCTGTGAGCAGTTGCGG
CAATATGTTGCCTTGTGCCGACTTTGCACCGTTTTTGTGCTAAGGAAGCTGC

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 61>:

gmm_61

CCCGTATCGGATGATTTTTGGGGGAATGGTTGCGCTCATGTTTTTGTATAACGGGAAACC
20 CGTTTTTCTCTGTAGAAAGGTAAGCGTTTACTTTAAGTAATTGACTGTTGCGGGTCAAGT
CTAATTTTAAAAATAATCCGGTTTTTCTTACAAACTGCCCCATAACGCTTACTGTACC
TTAATCTGATGGTTTTTCGATAATAATTATCATTACAATGCAATGCCGGTTCGTTTGCTTG
TGAACATTCAAGATGCCGACTCTGACGGCATTGACAGCATCTGAAAACAATAACGGCA
CAAGGATGGGGTACAATCGCCCTATGGAACCAACCCCTATCCGCCCGCGCACCATCCC
25 CTTGGCTGCCGCTTCTGCTGGCAATTGCCATTTTATGCAGATGTTGGATGCGACCATTT
TAAATACCGCACTGCCGAAATTGCCGCCGACCTGAATGAGTCGCTCTGGATATGCAAC
TGGCAGTATTTCCTACACGCTGACGGTTGCCCTGCTGATTCTTTGAGCGGTTATTTGG
CGGACAGGTTTCGGAACGAAAAAGTCTTTTTCGGTTTCGATTGCCGTTTTTATGCTCGGAT
CGGCATTGTGCGCCGCATCGGGTTCGCTGTTGAATTGACGCTTCCCGTGTGCTTCAGG
30 GCATCGGCGGTTTCGATGCTGGTTCCGATACCGGCTCTGACCATCTTGCGTGTGTACGACA
AGTCCAAGCTGCTCAATGCCATCAATTATGCGGTTATGCCCGCATTAAATCGGGCCGGTTT
TAGGGCCTTTGGCGGGCGGTTATTTGGTCAATACGCTTCGTGGCACTGGATTTTCCTGC
TCAACCTGCCCATCGGTCTGCTGGGTTTCATATTGGGACGCAACATCATGCCCGATATTA
AAGGCAGTAATATCTTTAGACTTCAAAGGTTATCTGATTTTTTCTGCCGCCGCGTGCC
35 TCTTGTTACTTTTCGGCAGAAAGCCTGTGCGACGCGCTGCCCTCCGTATTTTGCACGTGTTGC
CGCTGTGCGGCGGACTGCTGTTGCACGCGGTTATTTCCGACATATGAAAACCGCGTCCA
AACCGATTTATTCCGCCGACCTGTTTCTGATACGCACTTCCGTCTGGGACTGGCGGGCA
ATCTGTTTCAGCCGCTCTCGGCATCAGCTCGATTCTTTTCTGATGCCCTGATGTTTCAA
40 TCGCTTTTCGGCTTCGGCGCAAGCCTGTGCGGTTGGCTGGTGCACCCGTCGCCCTGTCTT
CGCTGCTGGTCAAACCGCTGATTGCACCGCTCATGAAACGTTTCGGCTACCGCACGGTAC
TGCTTTGGAACACCAAGCTGCTTGC CGCCTTCATCATGCTGCTCGCCCTGCCTGACGGAA
ACTCGCGCTGTGGATTGGGTTTTCTCTGCTGGCGATCGGCGCGTGCAACTCCCTAC
AGTTTTCTGCCATGAACACACTGACCCTCGCCGATTGCGCCCGCAACAAACAGGCAGCG
GCAACAGCCTGATGGCGGTCAACCAACAGCTTGCCATCAGCATGGGCATTGTTGCCGGCG
45 CATTAATCCTTAAAACTGGACATTTCTGATACCGGCTTCTTCAGGTCTGCATTCCGCTT
TCCGTATGACCCTGCTCAGCATCGGCGGCATCACCTTGATCATCGCTGGTTTTCAAAC
GGCTGCACGTTTCAGACGGCACCAACCTGACACGGAACACACCGTCTGAAGCGGTCCAC
ACGCAAACTTTTACCCGTTTCAACGTTTGGATTATGATACCGCACTTCCATGCGCGCCA
ACCCCAAAACACAGGCAATGCCGTCTGAAACCATATCCCTGATGAAAACACGACGCTAA
50 TTTCCCTTTTATGCCTCCTTCTCTGTTTCATGTTCTTCATGGTTGCCCCCACTGGAAGAAC

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5 GGACGGAAAGCCGTCATTTCAATACTTCCAAACCCGTCGCGCTGGACAACATCCTGCAAA
TCCGGCACACCCCTCATACCAACGGGCTATCCGATATCTATCTGTTGAACGACCCCCACG
AAGCCTTTGCGCGCCGCGCCGCTTATCGAATCTGCCGAACACAGCCTCGATTGCAAT
ACTACATCTGGCGCAACGACATTTCCGGCAGGCTGCTGTTCAACCTCGTGTACCTTGCCG
10 CAGAACCGGCTGTGCGGCTACGCTGCTGTTGGACGACAACAACACGCGCGATTGGACG
ACCTCCTGCTTGCCCTCGACAGCCATCCCAATATCGAAGTGCGCCTGTTCAACCCCTTCG
TCTTACGAAAATGGCGCGCACTCGGCTACCTGACCGACTTCCCCCGCCTCAACCGCGCA
TGCACAACAAATCCTTTACCGCCGACAACCGCGCCACCATACTCGGCGGACGCAATATCG
15 GCGACGAATACTTCAAAGTCGGTGAGGACACCGTTTTGCGCGATTGGACATCCTCGCCA
CCGGCAGCGTCGTGCGCGAAGTATCGCACGACTTCGACCGCTACTGGGCAAGCCATTCCG
CCCACAACGCGCACGCGCATCATCCGCGAGCGCGACATCGGCAAGGGTCTTCAAGCACTCG
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CGCCCTCTACCAAAAAATACAGACAGGATGCATCGACTGGCAGAGCGTCCGAACCCGCC
20 TCATCAGCGACGACCTGCAAAAGGACTCGACCGCGACCGCGCAACCGCGGATTGCGG
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25 CCAAAACCTTCAATTGTGGACGGCAACGCATCTTCATCGGTTGTTCAACCTCGACCCCC
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30 TATTATAGAAATATAGCGGATTACAAAAACAGTACGACGTTGCCTCGCTTAGCTCAA
AGAGAACGATTCTCTAAGGTGCTGAAGCACAAGTGAATCGGTTTCTGTTGTTGTTACT
GTCTGCGGCTTCTGCTCGCTTGTCTGATTTTTGTTAATCCACTATACCGTCTGAACACC
TTCAGACGGATATCCGAACCCGCAAGGAAAAACATGTTTCCCCCGACAAAACCTTT
TCCTCTGTCTCAGCGCACTGCTCCTCGCTCATGCGGCACGACCTCCGGCAACACCGCC
35 AACCAGAAACCCAAACAGACAGTCCGGCAAATCCAAGCGTCCGCTACGACATCGACC
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AATGGGCGCGCAGCAGCACCGCAACCGGCTTCGATTGCAGCGGCATGATTCAATTCGTTT
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40 CACACCGCTACTCACACGTGCGACTCTACATCGGCAACGGCGAATTCATCCATGCCCCCA
GCAGCGGCAAAACCATCAAAACCGAAAACTCTCCACACCGTTTTACGCCAAAACTACC
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50 GAAACTTCGACGAAGTTTTCGCCCCAAACCGACGTCCGCCCCGATTTTTTCCAGCTCGCGG
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55 GAAATCAATTCGCGGACCATACGATTTCAAACGCTGCCCCGTGAGCGGCAACGCCATT
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25 CCAGTCCGTTCAATTTCCGTCAATTTCCGATAAATTCCTGCTGCTTTTCATTCTAGATTC
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55 CAAATTTACAAAGGAGCCGATATGCCAAAAAACCTACCGCCCTCGTATTGTCCGCAC
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15 CTGCTTCTACCGCTTCGGTAATGCAGTTCACGCATCAGCTATGCCCATGGTTTCGACT
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20 TGCAATCTGACTGCCAATCTGCTTCAGCCCCAAACAAAATCCGGATACGGAAGAAAAC
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AAAAATGCGCCAAAATTTTCAATTGCCTAAAACCTTCCTAATATTGAGCAAAAAGTAG
GAAAATCAGAAAAGTTTTCGATTTGAAAATGAGATTGAGCATAAAATTTTAGTAACCT
25 ATGTTATTGCAAAGGTCTCGAATTGTCTATCCACGCGAGCGGGAATCTAGTCTGTTCCG
TTTCAGTTATTTCCGATAAATCCTGCTGCTTTTTATTCTAGATTTCCACTTTTCGTGGG
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CCTTAGCTCAAAGAGAACGATTCTCTAAGGTGCTGAAGCACCAAGTGAATCGGTTCCGTA
30 CTATTTGTACTGTCTGCGGCTTCGTGCGCTTGTCTGATTTTGTAAATCCACTATATT
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CAGCCACGCTTTTTCGCGCCCTTCGGTCAGCGGCTCGAGGCGGCGGCGGACTTCGCGGTG
GTAGCGGTTGACCCAGTCGATTTCGCCGTGCGTCATGAGGCGGTTGCCATCAGGCGGGT
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CGTGGGCGAAATCGTCGGCAAAATTTGGATTGAGGCGCTCAAACAGAAAAACAATGCCG
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AAGCCGACAGACAGTACAGATAGTACGGTAAGGCGAGGCAACGCTGTACTGGTTTTGTGA
30 ATCCACTATATTGCTAGAAGTGCACCGATTAAGGTTAATTAAATACGACCCCTATCCCA
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35 ATCAAAGACAAATGTATCTACAGATGGTTTTTACCATAGAAAAATCCGGAATACGTAC
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TGCTGCTTTAAATCCTTTAAAGTGCATAGTGTGAGGTTTTTATCCACATGGTAATTATA
GACCGTATCCTGACCGAAGCCTTCGCGAAGACATAAGTATCCGAACCGCTGCCGCCCTC
CAAGTAATCATTGCCTGCACCGCCGATCAGAGTGTGCTTACCGTCTTCGCCGTTCAAATG
40 ATCATTGCCTTCGCCACCATTAGTGATCGTTACCATTATAGCCGTACAGGGCGTGGT
GCCTTCTCCTCCATCGAGCGTATCATTTGCCATTGCCACTGTAGATACTGTGCTTGCCTGC
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45 GATACGGTAAGCACCTGAGCCATCGTTCTGGAAATAGGACTGAACAGTCACTTGTCCACT
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55 GATACGGTAAGCACCTGAGCCATCGTTCTGGAAATAGGACTGAACAGTCACTTGTCCACT
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5 ATCACCATTAGCAGGTATCCCGCTCGGCACCGTACAGATAGTCATCGCCCAATCCGCC
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20 TGTAATACCGTCGGTAAAGCGGATGATGTCTTTGCGTCCGGTAGCGTAGTCGTAATTATA
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25 ACCTGCTTTTTTGCCTCCTCCACATAATCGGTCAATTAGTCTTCGCCCTTCATACCAAGA
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40 GGTACGCAATTCATTAGCTTGGGAAATGCCGTCCTGATTGAGATCCTGCCATACACGCAG
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45 GCCTGCAAAGCCTTTGGTGGCAACGGTTTCTATACCGTCGCCATCTAGGTCTAGGGCAAG
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5 TAACTGCTTTCTATTATCCCTTTTCGCTACCGTTCGGATTATTTACTGCTTGCTCATTGTG
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10 TAGACGCGCATATTGCCTGAAATGTTGCAGTGCACCCGATCAAATTTCTCTAACGGGT
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CAAATTAGCCAAATAACGCCAACCGCCATAGGTATCGCCACGGGAAGCATAACCACGCAA
GGTTTGGATTTGTTCTGGTGTAAAAACAATTACCCCTCATTCAATTAAGATCCTTTAA
15 ATTATTTTTTACTTGAATTGTTGACAAAACCTCTGTACCAATTGCTCTACTTGTGGTGT
AAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 62>:

gnm_62

15 GGATTAACAAAAATCAGGACAAGGCGACGAAGCCGACAGTACAGATAGTACGGAACC
GATTCACCTCGGTGCTTTCAGCACCTTAGAGAATCGTCTCTTTTTTGTTCATCCGCTATAT
TGTGTTGAAACATCGCCACAAACCTGATATAGTCCGCTCCTGCAACATCATTGAAATTG
TTCTTTTTAATCAGTTAAACCGAATACGGAGTCGAAAATGAATCCAGCCCCAAAAAAC
20 CTTCTCTTCTCTTCTCTTCTCTTCTCTTCTCTTCTCTTCTCTTCTCTTCTCTTCT
CTTCTCTTCTCTTCTCTTCTCTTCTCTTCTCTTCTCTTCTCTTCTCTTCTCTTCTCTTCT
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GCAAGCAACCGGTGCAAAACAACAAGCACGGTAAGCGATTATTTAGAAACATCCGTGC
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25 AGAGATAAACAACAATAACAAGAAACCCAAACAAACATCAAGGAACGGCAGCTTCCA
CGCCTCTTCTCTCTCGGCTTATCCGCCATTACGATTCAAACCTCAACGATAAATTCAA
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30 TCTTGGTGTCTATCGCGGTGTGGTTCGACATCACGCCAAGCTGACCTTGGACACCGG
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35 CGGTTTCTTTAGATTTACGTCTTAGATTCCCACTTCCGTGGGAATGACGGTTCAGTTGC
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40 GATTCCCACTTCCGTGGGAATGACGTGGTGCAGGTTTCCGTATGGATGGATTCTGTCATT
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CCTAAAGGACGCCCGGATGCCGTGATTATCGGGTATCCGGGAGGATTAAAGGGGTTATTT
30 GGGTAAATTAGGAGGTATTTGGGGCGAAAACAGCTGAAAACCTGTGTTGGGTTTCGGC
TGTCGGGAGGGAAAGGAATTTTGCAAGGTCTCAACTTGAACAAAAAGAACCGCCCCGA
ATCAGGGCGGTTTGTCTTTGTGGCGGAAACGGTGGGATTGCACTAAATTTTATTTCAATG
ATTTAAATATATTTATTTCTTATGAAAATTTAATTTACCATAAAAACAGCCATATACAAA
AATCTTGGAGTAATATTGCATTACACTATTAGAAGAAATGCCGTCTGAAGTGTTCGGA
35 CGGCATTTCCCAAGCTGCCGGAAGAAAGCTAAATGCCCGCAACAGACAAGGAGCAGCG
ATGCAAAACCAAAATACACGCCCGCTCAAAATCGAGCTTAAAGGCGAAGCAGGCAACCGC
GTACTGCTTGGCGCGCCGCCGCGCATTTGCCAAAACCCATCAAAAAGCCGTCAAGGCACTT
GCCGACAAATGATAGACGGCGAACTGGTCGCGCTTATCCATCAAACCGTATTGGCGGATG
AAGCGGGTTTGAAGGGCGGGCGGATATGGCGCGCTTGGACGGCGCATTGTGCGGGATTG
40 CCAACTGGCGGCAGTATGAAAACCTTGAGGACATCTACGAAATCGCCGCCCTCTATGCAC
AAGCCATAGCCAAAGCCACGCCCTTTCCCGACGGCAACAAGCGCACCGCGCTTTTAACAA
TGTTGACCTATCTGGATTGTCAGGGCATCAGCATTGCCGCCGACCAAGGGCTTGACGACT
TGATTGTCACTTTGGCGGCGGGAGAAACCGACTTCAAACAGCTCGCCGAAACCTGCGCC
GGCTGGATAAGGAATAGGCATATCCGACAACAATGCCGTCTGAAATTCAGACGGCATT
45 TATTGAAAGGCTTTTCTTCAACCGCTTACACAAGGCGGTTTTTTTATGCCGTCTGAAA
GCCCTTCAGACGGCATTGGTTTACACGGCAGGAGTCCCCCGCCTTTAAGCAGGAGAGGA
TGTCAGGATGCCTGATTTTTTAAATCACCCCTTGAAAGAACGGGCGCACGGCATTAAATAT
ACAGATATCGACAAGCAAGGTTAAACCATTAAGGAAATACGATGAAATACAAAAATGAG
GGTTTTAATGGCTGGTAAGGTGCGGAAACAAATAAACAAAGGAGGTTGGTTGTCAGTAAT
50 TGCCCTAACCTCCTGTTGTATCTGTATTCACTTTATTTTACATATTACGGCACAGCGT
ACAGTTTAACTATGAGGGACGGCGGAATGGCTGATGTTTGGCAACTGACCGTTGTTTC
AGTAACCGCCGTCATTGCACTGGGGACAATATTCATCAATAAGAAAACCTCAAAGCAAAA
GGCGACATTAGATGTTATTTGAATGATTACCAAGATGCACAATTTGTAGAAGCCGACAA
TCATATTTGCGCTTATATTGCGGCGACGGCAGTTGACGACAACAACGCGCGGATCGACCT
55 GTATGAAATTTATCAAATAAGGGCGGACAATGGGAAAAAGAGAGAGGGCATTACTTAC
CGTAATCAATCGGCACGAGTTTTATGCGTGCGCAATCAACTCGGGAGTATTGGATGAGGA
TTTGTTTAAACGGCTGCATTGCACCACTTCATAAAATTTGGAATGCAGTTTCGCCCTCT
TGTTATGAAATACCGGAAGAAGACGCAAGACACAATTTAGAGAGTTGGAATTTT
GGTTCGATTATGGAAGCAACCCCTTAAAGGCATCTGATTGTGAATAAACAGTCAAAA
TGTTTCTGAAATATGGGACGCCAGCAATCGCCGAAATACGCCAAAGCAGCCTTATAAAG
TGATTTTTTGAACATAATTTCTCCTTGGCGAGCATTTTCCAATCAAACAGTTTTAGTTT
ACTTGGTTTTGTATCCCTAAACAACCGAAATCCGACATCAAGCAATTAGAAAGCTTTTGC

ATCTTGAAAATGGATAACAAAATATTGCCTGAAGGCGCAAATACAGTACAAAAGCCGTCC
GAAACAGTTCGGACGGCTTTTGGCGTATTCTGCACAAGTATTTGAACAACTGAAATTTTA
TGGTAATATGTATCTACTTTGTAGATAACAATAAAGGTGAAGATTATGTTGCGTGTCCAAA
AATGGGGGAACTCGGCGGCCGTCCGACTGCCGTGCCGACATGCTGAAACAATTGGATTTTA
5 AATCGGCGACGCTTTGGTAGCGGAAGTACATAACGGCGAACTCCGTGTGCGTGTGCC
GACGTTTTCCGCTTGGCAGACTTGCTTGCCGAAATGGAAGAAACCCCGCGCGCTAGAAG
GCTGGGAAATCTGGATGATGCCGGCAACGAGGTGCTCTGAAATGTATATTCCCGACAAA
GGCGATATTTCCATTTGAATTTGACCCCTTCCAGCGGCAAGGAAATCAAGGGCGGGCGG
10 TTTGCGCTGCGTCTGTCTCCAAAAGCATTCAACCGCGCAACGGGATTGGTTTTTGCCTGC
CCCATTTCACAGGGGAATGCAGCAGCTGCACGAAGCAGCGGCATGATTTCAACCTTACTC
GGTGCAGGAACGGAAACGCAGGGCAATGTCCACTGCCACCAGCTCAAATCTCTAGACTGG
CAATCCCGCAAGGCTTCTTTAAAGAACTGTACCCGATTATGTATTGGACGATGTGCTG
GCGCGCATCGGCGCCGTCTTATTCGATTAAATGCTGAAACCGCCCGAACCTGTAATCTTT
TCTTACAGGTTTCGGGCGGTTGCTTATTCGGCACGCTGACTGCTTACTGCATGACCATATG
15 CCTGCCATTCCCTTAAATCGGCTGCATGTCCGTGGCTGTTTCTGCCAGTCTGCATATT
TTTCAGCGCACTGTCCGAATAATAGCCAGCCTTGGGAATCTGACGCGCCATCAGATGCGG
TGGCGGCGGTAGCGGTTGCGGGCAGGTTTCTGTTGCGATTTTGGGCGGCGGCGTAGTGGC
GCAGGCGGTTAAGCTCAAGACGCATAGCGGCAACAGTTTTTTTCAGCATTTTGTTCCT
CTTCTAATTTGGTTTGTCTGTTTCGGCAAACGCGGACGGCCTTCTGCTCGGCAGAACGCG
20 CCTGCTTTGCTGCTCGATATAGCCGTCTTTCAGACGATTTCGAGATTTTCGGCAGCAGCAG
CCTCCCGTCCCATGCGGTATTTTCGGCACGGTCGAAATGCCATGCGGTAAAAATCAGGA
CGATTAGCAGCAATACACCTACCGGCTTCCAGTATTTCAATAAAATATCCATTTTCAGACG
ACCTCAAGGATGCAGCCCGGGCAGATACACGTTTTCGCGTTCCTTGGTTGCGGTCAG
TATCTGGTTGCGTTGCGGGGCTGTTGCGTCGGAACCGATGTGTACCCATGCGCCGTCCCC
25 GCGCTCAGGAAATTCGAGTATCAACTGGTCGAATTTTCAGCGCACGGCGGATTTCGATTTG
AAGTGCAACTTTCCCTAACAGAAAAAGGCCAGTATGCGGTAGCATACGGCCTTTCTGCA
AGAAAGATTGCCATGAGCCACACGCAACTGACCAAGGCGAACGATACCAATCCAATAC
CTGTCCCGCCACTGCACCGTCACCGAAATCGCCAAACAGCTTAACCGCCACAAAAGCACC
ATCAGCCGCGAAATCAGACGGCACCGCACCCCAAGGGCAGCAATACAGCGCCGAAAAAGCC
30 CAGCGGCAAGCCGGACTATCAAACAGCGTAAGCGACAACCCTATAAGCTCGATTTCGCAG
CTGATTTCAGCACATCGACCCCTTATCCGCGCAAACTCAGTCCCGAAACAGTATGCGCC
TACCTGCGCAAAACACCACAGATCACGCTCCACCACAGCACCATTACCGCTACCTTCGC
CAAGACAAAAGCAACGGCAGCAGCTTGTGGCAACATCTCAGAATATGCAGCAAAACCCTAC
CGCAACCGCTACGGCAGCCATGGACAGGCAAGTACCCAAACCGTGTGCGCATAGAA
35 AACCGACCCGCTATCGTCGACCAGAAATCCCGTATCGGCGATTGGGAAGCCGACACCATT
GTCGGCAAAGGACAGAAAAAGCGCATTATTGACCTTGGTCGAACGCGTTACCCGCTACACC
ATCATCTGCAATTTGGATAGCCTCAAAGCCGAAGACTGCCCGGGCAGCTGTTAGGACA
TTAAAGGCACATAAAGACAGGGTGCACACCATCACCATGGATAACGGCAAGAGTTCTAC
CAACACACCAAAATAACCAAAGCATTGAAAGCGGAGACTTATTTTGTGCGCCTTACCAT
40 TCTTGGGAGAAAGGGCTGAATGAGAACCAACCGACTCATCCGGCAATACTTCCCCAAA
CAAACCGATTTCCGTAACATCAGTGATCGGGAGATACGACGGGTTCAAGATGAGTTGAAC
CACCGACCAAGAAAAACACTTGGCTACGAAACGCCAAGTGTATTATTCTTGAATCTGTTT
CAACCACTAATACACTAGTGTGCACTTGAATCCGAATCCAAGCAATATTAAAAATTAT
CGTCATCAATGCGGCTTCCCCAGCCCGCGGAGCTTTCACGACAGGCTTTTTTTATTT
45 GGGTTGGTCGTCTGGTTTCTTTGAGTTCAAAAACAGGTCGGGATACCTAAGTTTTATTTCG
TGCAGGTATCCCGCGCTTCGTCCAATTGAAAACGCATTGAGGGCTATTCCCTGTTATTTCG
ACCAACTTCCGCGTAATGCCGATTGATTGCAACAGGCGTTTGTCTTCATTGACTCTTTT
ATCCATAAATAAACCAATGTTTAAATCTAATGCTAATATTAAACACTATGTTTAGATAA
AAATCAAGTCTTGTGTAACAACATTTTGTGTTTAAATATGGGAGAATAATTAAGCAACCGC
50 GAATAAGATTAAAAATGACAATGCACGAGACAACTGACAGACTTTTGTAGATAGCCAAAG
AGCAGGGAGTTTTAAAGCCGGCTGACATAGCAGAGCGTCTGATATCAGCCAACAGGCTTT
GAAAACTGGGAAAGTCGTGGCATAGCGGCAAGGCGCTGCCTGAAGTAGCAAAAGCATT
CGGTGTATCTGAAACATGGCTGAGAACAGGTGAAGGCAGCCGAACCGCGCCGTCCTTAT
TGACCCCGACCTACCCACGAAGTCAAAGACATCCACCGCCGATGACGTGGAGCAGCAA
55 CGACCCGCTGCCGACGATGATTATGTTTTCGTCCCCTACCTCAAAGAGAGCTGCTTCAA
AGGCGGAGTAGGCACGTATGAAATCCCCGATTACAACGGCTACCGCCTGCCGTTTCGGCAA
ATCCACGCTTAAACGCAAGGCATCAATCCCGACAACGTGTTTTGCTGCACCCTGACCGG

CGACAGTATGGAGGAAAAAATCGCAGAAGACGCGGCAATTGCCGTAGATACGGGCGAAAC
CGCCATACGCGACGGCAAAATCTACGCCTTCGCCCAGGACGGTATGTTCCGCGTGAAGTA
CCTGATACGGCAGCCTGGCAACAGCGTTCTGATACGCAGCCACAACAGCGTTTCTATGG
5 CGACGAAAACGCCCCCTTGGACAGCCTGACCGTTATCGGCAGGGTATTTTGGTGGAGCGT
GCTGGATTGAAAAATGTTGCTATTACGACGAGATAATATTGATAGGGCTTTCAAGATTGT
CAAAAATAGGCGTTTTGATTCCCCTTGGTGGCCTGGTGAAGTACGATGCCGGTATGAATTT
CCTTGGCGTACAAGGAGAGTTGAAGGTTACGAGCTGCATCAGAGAACAGCAACCCTGTG
CTTTGAGTGGCTTGGCGAAGTATCTGCCCGCGCAGAAAAGAGAACTACAAAGACCTCAA
10 GCCAAATGTATTGTATGACTTTGATGGTTCCGGTAAGCATTGTGCCAACCTGACGCAAG
GTATCTATTGCCCGTCGGTTCAAGCGGCTTAATCTTAAACATATCCAAATCGATGACGA
AGACACTCTGTTGCGGTATGGTGGCGACGAAATATCCCAATGCCACACCGGTATCTAA
AATCCCGATGCTTCGCGAGTATTATCTAAGCAAGGCATGGCAGAAATTTATGCTATCAA
CCAACACCTAAGGAAAACGAAGCTGATAGTTGATGTGGCATAACGACCCACAGATTAAAC
15 AACCCGCCCGCATTATGCGGGCTTTTTTCATGCCCCGCCGAACCTGAAAACAACACAAAA
CGACATAGCCGCGTACC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 63>:

gnm_63

CCGTCTTTTGTGCTACCTTGCCCGAATCATCCGATGTCTAAAAATTCTGCCTGATGGCA
20 GCCCTACAAACCCGAAGGAGTAGAAATGAACTGTCCGAAGTGTCAACCCCGACGAATT
TGCCGCGCGGCAATTTGAGTTTGGCGACGAAGCGGCGTTGCTTGCCTGTGCGCGAGAA
AAGTATGGACGATTTTTCGGCAACACCGTGGCGCAAAGCATCCGTATGCCGTCTGAACT
CGATTTGCCCGATGCCCTGACCGAAGCGGACGCGTTGGCAAAATTGAAAGGCATTGCGTC
25 GAAAAACATGATCAACAAATCCTATATCGGTTTAGGCTATTACCCGACCCGCGTGCCGAA
CGTGATTTTGCCTAACGTATTGGAAAATCCGGGTTGGTACACCGCTACACGCGGTATCA
GGCGGAAATCGCGCAGTCTGTTTGAAGCTTTGTTGAAGTTTCCAACAAGTGTGTATCGAT
TTGACCGGTTTCCCTGTGGCGGGCGCGTCTTTGCTGGACGAAGCGACCGCCGCGCCGAA
GCGATGGCGATGGCGCACCAGGTTGGCAAGGTAAAATCCGAGCGTTTCTTTGTGGACGAG
CGCGTGTATCCGCAAACTTTGGACGTGATGAAAACCCGTGCCAAGTATTTCCGGCTTCGAG
30 CTGGTGGTGGCGGATTTTGCCCAAGCCGACGAAGGCGAATACTTCGGCGCGCTGTTCCAA
TACGTGCGCAAAGACGGCGACGTGCAAGACTTGCAAGGACGTTATCGGCCGTCTGAAAGCC
AAAGGCACGATTGTCGCCGTTTCCGCCGACATCATGAGCTTGGTTTGTGTAACCGCCT
GCCGAATTGGGTGCGGATATTGCGTTGGGCAACACACAACGCTTCGGCGTGCCGATGGGC
35 TTCGGCGGGCCGACGCCGCTTATTTGCGGTTTAAAGACGAGTTCAAACGTTCCGCCCGG
GGCCGCATCATCGCGTATCCAAAGACGCATCGGGCAAACCTGCCTTGCGCATGGCTTTG
TCCACCGGTGAGCAACACATCCGCCGCAAAAAGCTACATCCAATATTTGTACCGCGCAG
GCATTGCTGGCGAATTTGGCGGGTATGTATGCCGTTTACCACGCGCCTGAAGGCGTGAAA
CGCATTGCCAAACCGCATTACGCGCTGGCTTCTGCCTTGCCGATGCGCTGGTTTCAGAC
40 GGCCTGAATGTGGTTACAAAGTCTTTTTGATACTGTTACCATCGATTTTGGCAGTAAA
GAGAAAGCAGACCAAGTGTTCGCCGTGCTTTGGCGTCGGGTACAACCTGCGCCGCGTC
AACGATACTCAAGTTGCGGCTGCATTCCATGAAACATCGGCATACGAAGATTTGGTCGAT
TTGTACCGCGCGTTTACCGGCAAGGATACGTTTACATTGCCGATGATGTCAAAGGCCGT
CTGAACGCCGAATTGCTGCGTCAGGACGACATCTGCAACATCCTGTGTTCAACAGTTAC
45 CACACCGAAGCAGAAATGTGCGTTATCTGAAAAAAGCTGAAAGACCGGACTTGGCGATG
AACCAGCATGATTTTCAATTGGGCAGCTGTACTATGAAACTCAACGCGACTGCGGAAATG
TTGCCGATTACTTGGGCCGAGTTACCGACATCCATCCTTACGCTCCCGAAGCGCAAACC
GCCGGTACCGCGAATTGCTCGCGGATATGGAAAACAGCCTGAAAGCCATCACCGGCTTT
GACGCGATTTCCCTGCAACCAAATTCGGCGCACAAAGGCGAATACACCGGTATGCTCGCC
50 ATCCGCCGCTATCAGGAATCCCAAGGCGAAGCGCACCGCAACATCTGTCTGATTCAAAA
TCAGCCCACGGTACCAACCCCGCCACCGCGCCATGCTCGGTTTGAAGTCGTCGTCGTC
GACACCGACGAACCGCAACGTCAACATTGACGATTTGAAAGCCAAAGCCGAGCAACAC
CGCGACGCTTTGTCTGCCATCATGATTACCTATCCGTCCACCCACGCGGTGTACGAAGAA
GGCATCCGCGACATCTGCCGATTATTACGAAAACGGCGGACAGGTTTACATGGACGGT

CGCAACCTCAACGCCCAAATCGGCATCATGCAAGCTGCCGAAGTCGGTGCGGATGTGTGG
CACATGAACCTGCACAAAACCTTCTGTATCCCTCAGGGCGGCGGCGGCCCGGCATGGGT
CCGATTGGCTTGAAAGCCATTGGCTCCGTTTGCCCGGGGCCATACCTTGACCGACACC
5 CACAACGCGGCTGCCGATCAAACCGCCGTGGCTGCCGCAGCATATGGTTCGTCATCCATC
CTGCCGATTACTTGGATGTACCTGACCATGATGGGCAAACAAGGCATGGAACAGGCAACG
CGCTGGGCATTGCTCAACGCCAACTACGTCGCCCAAAGCCTTGGGCGAGGATTATCCGATT
CTCTACACCGGCAAAAACGGCCGCGTCGCCGCACGAATGTATCGTCGACTTGGCGTCCGCTC
AAAGCCGAAGCGGCATTACCGAAACCGACATCGCAAACCGCTGATGGACTACGGCTTC
10 CACGCCCCGACCGTCTCTCTCCCGTTGCCGCGACGCTGATGATCGAACCGACCGCAAAGC
GAGAGCAAAGCCGAACTCGACCGCTTCATCGCCGCCCTGAAAACAAATCAAAACAGGAAGTG
CTGAAAGTCGGGCGCGCGGAATGGCCGAAAGACGACAACCCACTGGTCAACGCGCCGCAC
ACCGCCGCAGATATAACCGGCAACTGGGCGCATCCGTATTCGCGGAAGAAGCCGTCTTC
CCGTTGCCGTTGTCGCGGAACACAAGTTTTGGCCTTCGTCGAACCGCTGGACGACGTG
TACGGCGACCGCAATCTCGTGTGCAGCTGCCACCGATGAAAAATTATGAAGACTGACTG
15 TTGATATCTTAAAAATGCCGTCTGAAACATTTTCAGACGGCATTTCATCAACGGCAAA
CCAGTTGCACCAATACACGTATCTCGACTATAACTTTAAAAACAAATGAGTTAAACAGTA
TCCATACATCAGCTTTTTATCATCTTACTTTTTATTATCCGATCGTGCAACAGATTT
CAAAGATGAAAAGCCTATTACACCCCTTTGATGTCAATTCACACGGCAACAAACAAATATA
GTGGATTAAACAAAACAGTACAGCGTTGCCTCGCCTTAGCTCAAAGAGAACGATTCTCT
20 AAGGTGCTCAAGCACCAGTGAATCGGTTCCGTAATTTGTACTGTCTACGGCTTCGTC
GCCTTGTCCTGATTTTTGTTAATTCACTATAAATCCCATAAAAAACGGAGCAGATACC
TGCCCCGTTTTTTATTTAATCCGAAATTTAATCTAAATTTAGAATTTTGACCCGGATTGG
TTTGCCATATAGTCAACAGCCGCTTTGACTTCGTATCGCTCAAACCTGCATTGCCGCCT
TTGGCAGGCATCGCTTTAAAGCCTTCAAGGGCGTGTTGTGCAAGTTTCTTTGCGCTTT
25 TTGATACCGGTCGCCAATCGTCTTTTTTGCTTATGCCGGAATACCGGGAATCGAACCG
CCGTGGCACACCTGACAGGTTGCTTCGAAGACTTTTTTACCGTCAACGCGCAGCCGAGGG
GCTGCCGACCCCTTGCTTCTGCCTTCGCTTCTGCCGGAGCTGCATATCGGCAGGAGCA
GAAGCTGTTCTGAAGCGGCATTGTCCGAGGCGCAGCCTCATCAGGATTCGGGAAAGAA
CCGCCGCTTTTGTTCCGCATGTAAGTAATCGCCGTTTAAAGTTCCTGATCGGTGAGGTCT
30 GCCGCACCGCCTTTTGACGGCATGGCGTTAAAGCCGTTACGCGCGTGTGGAACAAGGTA
TCGAAGCCTTGCGCGATACGCGGTGCCCAATCGCCGTTGTGTTCCAGTTTCGGAGCGTTC
GGCACATTGCTGTCCGCCGCGTGGCATTGGATACAGATTTTGCCGAAAATCTGTTGCCT
TGCGCTTGCCGCGAGGGGATGCCGTGCCCATCGTCAATTGTCCGACAGGCTGGATACGG
GTCTCGGTTGCTGCTTCCGTAGTGGCATCGACATCGCCGAACGAGCCGCTGCCCGCCAGC
35 TTAATCAGGAAATAAAGGACTGCAATAAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 64>:

gmm_64

40 TGTGTTGTTTGCACCGGTTGCnTGCGGATAATCGTGGGTAATGCGTTCGCGCGCATAAGC
TAAATCCGCCTGCACATAATACGGGCTGCGGCTGCCGCTTCTCACTTGCCGCCTGCGCTGC
GGAAGAGAAGAGAAGAGAAGAGAAGCGGAGAGGAGGGGAGGGGAGGGGAGGGGAGGGGAG
GGGAGGGGAGGGGAGGGGAGGAGAAGGTTTTTTGGGGCTGGAATTCATTTTCGACTCCGT
ATTCGGTTTTAACTGATTA AAAAGAACAAATTTTCAATGATGTTGCAGGAGCGGACTATAT
CAGGTTTTGTGGCGATGTTTTCAACCAATATAGCGGATGACCAAAAAGAGAACGATTCTC
45 TAGGTTGCTGAAGCACCGAGTGAATCGGTTCCGTACTATCTGTACTGTTCTGCGGCTTCGT
CGCCTTGCTCTGATTTTTGTAAATCCACTATAAAGACCGCTCGGGCATCTGCAGCCGTCAT
TCCCGCAAAGTGGGAATCTAGAATGAAAAGCAGCAGGAATTTATCGGAAACGACCGAA
ACCGAACGGACTGGATTCCCGCCTGCGCGGAATGACGGGATTTTAGGTTTCTGATTTTTG
50 GTTTTCTGTTTTTGAGGGAATGACGGGATGTAGGTTCTTAGGAATGACGTGGTGCAGGTT
TCCGTGCGGATGGATTTCGTCAATCCCGCGCAGGCGGGAATCTAGACCTTAGAACAAACAGC
AATATTCAAAGATTATCTGAAAGTCTGAGATCTAGATCCCACCTTCGTGGGAATGACG
GTTTCAGTTGCTACGGTTACTGTACGTTTTCTGTTTATGTTGGAATTTCCGGAACCTATGA
ATCGTCATTCCCGCGCAGGCGGGAATCTAGACCTTAGAACAAACGCAATATTCAAAGATT

-527-

ATCTGAAAGTCCGAGATTCTAGATTCCCACGAAAGTGGGAATCCAGGATGTAAAATCTCA
AGAAACCGTTTTATCCGATAAGTTCCTGCACTGACAGACCTAGATTCCCGCCTGCGCGGG
AATGACGGGATTTTAGGTTTCTGATTTTGGTTTTCTGTTTTGAGGGAATGACGGGATTT
TAGGTTTCTGATTTTGGTTTTCTGTCCTTGTGGGAATGACGGGATGTAGGTTTCGTGGGAA
5 TGACGTGGTGCAGGTTTCCGTGCGGATGGATTTCGTCAATCCCGCGCAGGCGGGAATCTAG
ACCTTAGAACAAACAGCAATATTCAAAGATTATCTGAAAGTCCGAGATTCTAGATTCCCGC
TTTCGCGGGGAATGACGAAAAGTGGTGGGAATGACGGTTCAGTTGCTACGGTTACTGTCAG
GTTTCGGTTATGTTGGAATTTTCGGGAACTTATGAATCGTCATTCCCGCGCAGGCGGGAA
10 TCTAGTCTGTTCCGTTTTAGTTATTTCCGATAAATGCCTGTTGCTTTTCAATTTCTAGATT
CCCGCTTTTTCGGGAATGACGGCGACAGGGTTGCTGTTATAGTGGATTAACAAAAACCAG
TACGGCGTTGCCTCGCCTTAGCTCAAAGAGAATGATTCTCTAAGGTGCTTAAGCACGAGT
GAATCGGTTCCGTACTATCCGTACTGTCTGCGGCTCGCCGCTTGTCTGATTTTTGTTA
ATTCACTATATCCGATTTTTTCGGCATTTCCTTTTCGGGCGGCTTGTCTCGTGCGTG
15 ATGTTGCGTGTGGGAATGTTCCGATTGTGAGAAGCAATATGGGAGAAGATGATGTATGAG
ATAAACAGCCTTTTCATAGCGGATACTTGCAAGTGTCTGAAATTCATCAAATTTATTGG
GAGGAATCGGGCAATCCCGACGGTGTGCCGTTATTTTTTACATGGCGGGCGGGCGCG
GGGGCTTCGCCTGAATGTGCGGGTTTTTCAATCCCGATGTGTTCCGCATCGTCATCATC
GACCAGCGCGGTTGCGGACGTTTCGCGCCCGTATGCTGTGCGGAAGACAATACGACTTGG
GATTTGGTGGCGGATATTGAAAAGTCCGTGAAATGCTGGGTATCGGGAAATGGTGGTG
20 TTCGGCGGTTTCGTGGGCGACACTTTGTGCTGCGCTTATGCCCAAACCATCTGAACGG
GTAAAGGGATTGCTGTTGCGCGGGATATTTTTGTGCAAGCCGTCTGAAACGGTGTGGCTG
AACGAGGCGGGCGGTGTGAGCCGGATTATCCGGAACAATGGCAAAAATTTGTCGCGCCG
ATTGCTGAAAATCGGCGGAACCGGCTGATTGAGGCGTATCACGGATTGCTGTTTCATCAA
GATGAAGAAGTGTGCTGTCTGCCGCGAAGGCTTGGGCGGATTGGGAAAGCTATCTGATC
25 CGTTTTGAGCCGGAGGAAGTGGATGAAGATGCTTATGCCTCGCTGGCAATCGCGCGTTTG
GAAAACCATATTTTGTCAACGGCGGTTGGTTGCAGGCGGATAGGGCGATTTGAACAAT
ATCGGCAAAATACGGCATATCCGACTATTATCGTACAGGGCGGATGATTGTGTACG
CCGATGCAAGTGCCTGGGCGGCTGTGAAAGCCTTTCCGGAAGCGGAATTGAGGGTGGTT
CAGGCAGGGCATCGTGCTTCGATCCGCTTTGGTGGATGCGTTGGTTTCAGGCAGTTGAG
30 GATATTTTGCCTTGTGTTGTAAGGTTCCGCATAAAAAAGCAGCTTCTGTTTGAAG
CTGCTTTTGTGTTGAATGGTTTAAACGAGTTTCGGAATGGAGTTTGCCCAATATGCGGAT
GCGTCTTTGCGCGCATATGCGCTGCCGTCTTTGTTGAGCAGGACGATGCGCGAGCCGTTG
GCGACAGGTTCTGCATAGACAATCAGTTCCGGCTGTTTCGGCAGGTTTCTCCGCTTGCCT
TTGCCCAGCAGGCGTTGAACAGGCGGGGTTTTTGTTCGTAAGTGCATTGCTTTCGTTT
35 GGGGCTTTTTGAACAGGAAGGCGTGGCGTTTCGGTGTGTTTGACCGACGCGTACGCGG
ATGCGGTGAGGGCGAGCACGGTGCGCCCGAGTTTCTGCCGTAGTCGCCAAAGACAATC
AGGCTTTTGCCTTCGATACGCGCATTTTCGTTGGCGGCGGAAGGGTAGGTTTTTTGCC
GATGCGTTTTCCGCTGCTGTCCGTCAACGCCCAATATGCATAAAGCGCGTCAGGAAA
GCGGCTTCGAGGTTGGGATCGGACGGGAGGGCTGCCATACGGTCTGTCTTTGCTTTG
40 CCGCGTACACTTCTTTCATGGCTTTGTGGGCGAAGAAGATGTCGGAACGCGGTTTTG
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CCGACTTTGTGCAAGAGGCGGCGCAAGCTGTCTTGGGGGATTTTGGCGCGGTTTTCCGCC
CACTCGGTTTTCCATTTGTCCGATGGCGGGTTCTTCGGATTGATGTGCAAGCCGTTTTCC
TGCCAAAAGGCTTTTCAGGAGCGGCCAGATTTCCGCGAGGAGACTTGCCGTGACAACGAGC
45 CAGCGTTGGCTGCCGTGCGCTCGAGGCGGACACCTTTGACGCTTTTCAATACTTCGCA
TCGGCAGGCTGTTGGACGGCGGGTGTGCGCGTTTTTCCAAATCGCTGGCGCGGACGGCG
CCCGAACCGGCGAGGCGGGTAGAGTTGCCCTTGGTGGGGTTGTTCAATCAGGTGGG
ACTTCAAGTTTGATCAGGCGGTGCGACCGGCTTTGGTAGTCGAGCTTGGGCTGTTTCGGT
TTGCTGCCGAGCAGGCGGCAAGCCCGATGAGTGCAGCGCGGCAATGACGGGTTTGATA
50 TGGGTCATCGTGTCTGCTGTGATGATGATTAAGTGTGTTGTTGCGTTATGCCGTCCG
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CTTTTGCTTGTCCGTTTTCCGTGAGCGGAACGAGCGGCGAGCGGAGTGCAGTTTCGCATC
TGCCAGGGCGGATACCGCCCATTTTCGTTGCGGCGGGGCTGGGTTTCGAGAATGTTGT
CGTAAATCGGAATCAGTCGGTCTGTTGAGTTCGCGTGCAAGGGCGATATCGCCTTGAAGCG
55 CGGCGCGGCACATATCGGCAAGAGCTTGGGCGCGGCGTTGGCGGCTACGGTAATCACGC
CGTGTCCGCCGAGAGCATGAACGGCAGGGCGGTGTGGTCTGCCGGAAGGACGACGA
AGCCTTCGGGCGCGCGGTTGATGAGTTGATGTTGCTGCCGATGTTGCCGCTGGCTTCTT

TCACGCCGACGATGTTGGGGATTTCGGCAAGGCGCAGGATAGTGTGCTTAGTCATGCTGA
CGACGGTACGGCCGGGCACGTTGTAGATAATCATCGGAATCGAAGTGGCTTCGGCGATGG
TTTTGAAATGTTGGTAAATGCCTTCTTGGGAGGGCTTGTGTAATAGGGGACGACGGAGA
GGGTGTAGTCCGCCCCGGCTTTTTTCGGCGGCTTGGGAAAGGGCGATGGCTTCGACGGTGT
5 TGTTCGCCCTGTGCCGGCGATGACGGGGACGCGTTTGGCAACGTGTTTGACGACGGCTT
CGATGACGGCGGTGTGTTCTTCGACGGAGAGGGTGGCGGATTTCGCTGTGCGCGACGG
CAACGATGCCGTCCGTGCCGTTTTCAATGTGCCAGTCGATTAAGTCGCGGAGTTGTTCTGT
AATGGATGCTGCCGTCTTGATTCATCGGGGTAATCAGGGCAACCAAGCTACCTTGTAACA
TACAGAACCTTTTTATCAGTTGTGGTGTAGGGGCGGTAATGCTTCCGATTGTAGCCTACTT
10 TACCGCAGGTGTGAAATCCGGCGGGTTCGAGATGTGGGCGCTTTCGCCGAAAGGTATGG
TGGAAATTGATTTTTCTGTGTGAAATCATTTTATTATATTTCGCCGTTTATGCCGGTGC
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AGAAGGATTCTCTAAGGTGCTGAAGCACCAAGTGAATCGGTTCCGTACTATTTGTACTGT
CTGCGGCTTCGCCGCTTGTCTGATTTTTGTTAATCCACTATAAAATGTGGTAAACGTG
15 TGGACCAGACGGATGCCGTCTGAAATGCAAATTGAAGCCGTGCGGCAGATTTCGCTACAAT
CCGCGCTTGGATTTTTCAACCTTTAAATAAGGAAATACAATGAGCGGTCAGTTGGGCAA
AGGTGCGGATGCGCTGATTTGGTGTACGGTTTGGAAAGACAGGCCGCGCTTCGGTAATGC
GCTCTTGAGCGCGGTTACCCATCTTTTGGCGATTTTTGTGCCGATGATTACGCCCGCGCT
GATTGTGGGCGGCGGCTGGAATTGCCGGTGGAGATGACGGCGTATCTCGTGTGATGGC
20 GATGTTGCGTGGGTGTGCGCACTTATTTGCAGGTCAACCGCTTCGGGCGGCTCGGTTT
GGGGATGCTGTCCATCCAGTCGGTGAATTTTTCGTTTCGTTACCGTGATGATTGCGCTGGG
CGCGGGGATGAAAGAGGGCGGTTTGACTAAGGATGCGATGATTTCGACGCTCTTGGGCGT
ATCGTTTGTGCGCGGCTTTTTGGTGTGTTTCTCGGCGTGGCTTCTGCCGATTTGAAAAA
AGTGATTACGCCGACGGTCAGCGGCGTGGTTCGTGATGCTCATTGGTTTGAGTTTGGTACA
25 CGTCGGCATTACCGATTTCGGCGGCGGCTTCGGCGCGAAGGCGGACGGCAGCTTCGGCTC
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30 GATTTCTTGTGAGCGTGTGTTGAGCGGTTCGGCGATTAAACCGGACGGCAATGGTGTG
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35 GAGTCCGGTGTGGGCGGCGCATGGTTTTGATGTTCCGCTTAATTGCGATTGCGGGCGT
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CGTAACCAACCGGAAATCCGCGCCGTATTCCTGCCCGTTTCAGGATTAATCGACAAAGG
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10 GACTTTTCCGTATTTTTTTCTTTTTTCGCACTTGCCGCGTTGATTATCAACCGCCTTTTCA
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15 CGTTGCCCTCGCCTTGCCGTACTATTGTACTGTCTGCGGCTTCGTCGCTTGTCCTGATT
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20 TTGACGTTGCGCTGTTGCCAGTATAGACGGGATGGGATGCGGAAGAAGTATCCAGCGAA
AACAGCGGATATCTTTGCCGTCTGTCAAACCATCGTTTTTCCGTGTGTTTCGGCACAG
GAGCGGATTAACAGCCTTCATTGCGCTGCTATCGAAAAATGACGGTTCGGTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 65>:

25 **gnm_65**

GTGCTGTAAATTATAGTTTGGTGTGTTAAACGCAGTTAAACATATTTTGTGGATTATAC
TGAATTCACAGGCTCTTTCCAATCGCTATCATTGAAATATGAAAAATTTGCCAACGGT
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30 ATGCCGCCATACGCCGCTGCGGGCGCAAGATAACCTTTGCCAATTTGCAGAAATTACGT
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35 GTAGCCGAACATGCCGCGCTGTTTGTGAAATAAGTGAATTCGCGATTGGGGATTGCGC
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40 GAGCGACAGGTTTTTTGAGAAGGAATTGCTGACGAACAAGGGCAATTCCATTTCCACCGC
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45 GTAATATGGGTAAGTGCCGACCTCGAAACCTGCGCCTTCAAAAATGCCGCGATGGTTGTC
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50 GCTCACGGATTCCAACACGGGCATTTTGCTTCGTGTCGAAATAAATGCCTATGCTCAA
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 66>:

gnm_66

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10 GGCATCAGTCAAGTCCGTTTTGTGCCCAAACCGCTCCATATGAAACATAAAACAAATC
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20 CGTCTTATCATCTAACTAATGTAATTTACCCGAGTACACGGTGTTCATCTTCACTCAG
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45 AGGCAACGCGTACTGGTTTTTGTAAACCGCTATAAACACGCGGTCAATTGCCGCGCA
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 67>:

gum_67

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 68>:

GNMBA22F gnm_68

45 ATGACGnCATAGGGnTTTCCGTTTTCCCGATAAAATTACCACAACCCAAAATCCCGTCATT
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 69>:

gnm_69

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 70>:

5 gnm_70

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20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 71>:

gnm_71

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30 AGCACTTCTTTTTTGAATCTTCGAAAATATTGCCCGATTGGATTGCAGCTTCAGCTCG
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TTGCCTGATATAAGCGGCAGAAGACATCGTCGCCGTGAGCTTTCGTTCTGATTAAATA
45 AACAGAATAGGCTGCGCGCGGCAAGCGGCCGAAAACCCAAACAGGACAGTTGAAAATAC
AATCCGAGATAATTTTTTTCATTGCAATAGCGATATAAAAACAAGGCTGTGTTTAGTAAT
CTGTTGATTTCAATTATTTGAAGGGAAAAGACAATTATTTCCGGTTAGGAATAAACCT
ATTCTATTGAATATTTGAAGCCAAGTACGCCTATCAACACTATATTAACACTGCCAA
AAACAATTAACCTATAAAACAATATGGTAAGGATTTCTCTGCCAAGCATCAAACCCGAGAC
50 AACGTATCGTAAAAATGCCGTCTGAAAACAAATCGTCTTCAGACGGCATTTCCCTTCAA
CTCACTCTTCAACCAATAACTGCTCGCGCGTCAAGAGGAAAACAAAACCGTCGCCCCCGC
TGGTTTTCCAACCAAGTAAAAGGCAACTCCGGATACGCTGCTTCCAATACATCCCTGTTAT
GCCCCGATTTCCACCAGCAATACACCTTTGGGATTAGAAACTTTGCCGCAATCAGAAGAA
TCTGCCTGGTGGCATCAACCCGTCGCCCGCGTCCCAATGCCAATTCGGTTTCGTGCA
55 AATACTCTTCAGGCAATAACTCAACCGATTCCGCATCCACATAAGGAGGATTGGAACAA
TCAAATCATAGTGCCTTCCAATCCTTCAAACAAATCCGTATGAATAAGCCGGATGCGTT
CTTCAAACCATATCTTCGACATTAATCCCTGCCACTTCAAAGCATCCAAGCTCACAT

-567-

CAACCGCATCAATTTGGGCATCAGGATAATGATGCGCCATCTGAATGGCAAGGCAACCGC
TTCCGGTGCAAAGATCCAAAGCATTATGCACCAACTCATCGTATTCTATCCAAGGACGAA
GTCCGTCAACCAACAATTATAAATAAAGAACGAGGTATGATTACGCGCTCATCCACAT
AGAAATCAAACCTCTCCCTGCCATGCCTGGTGTGTCAAATAAGCGGCTGGAATGTGTTTGA
5 CAGCAGCAGCTCAATAACCGCCAGCACTTCCTCTTTTTTTCAGCTTCCAAGAGTTTTCAT
CAAGATATGGGGCAAGCATATCCAAAGGCAAATTCAAAGTATGCAGAATCAAATAAGCTG
CTTCATCATGCGCATTATCTGTTCCATGACCAAAAAAGAGCCCTGCCTCATTAAAACGGC
TGACTGCAAAACGTAAATATCGCGGATAGTCGTCAATTCTTGTGCTGCCTGATTAAACA
TAATATGAACCAATTCTGCGTATAGATACTTTAATTATAACAGAAACAACAAGCAAACCT
10 TTTTCATATCGCCAAATAACCAACCAATCTACCCATACTACATAAATGCCCGCGCGAA
AACCATCGCCGAACGGAACGACAATGGCCGACGGTATGGGCAATCTGATTGGCTGGGA
AAAAACGGGGCTTGTGTGCGGTAAGCAGTGGATAACCGCAAAAGACGACAAGGTGTCGA
TGTCTGCAATGCCAACGGCGAGATGGGCGTAATCGGGCTTTACGAGCCTTTCTCACACGG
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15 CGAATTGGGGGAATTTGCCGAAAAAAGGAGCTTCGTAAGCGGCTATGCAGTATGCGCG
GGATAACTTTATCGGCAAAAGCTATGTCAATAAAAACAGCGGGCATGAAGTGAAGGTAAC
TTGGCAAGGTGTGAAACAGCTGCGTCAAAGGCAAAATCAGGCGGAATTATCCATCATGAC
AAAACCTTGATGACTTATTGCGCTACGCAAAATATGAGGGTCTTATTTCGGATAGGAAAGG
TCATCCTAATATTATTGACGACATAAGTATCGTGCGGTGCCAAGGTTGGGAATGAGTC
20 TTTAAATATCGGTGTGATTGTAAGGGAATTTCCAGACGACCATAAACATTACGACCATTT
CATCTTGAAGGATGAATAAAGCCCTTTTGCAGTGTGCTTCTGGAGCGGATAGCGTTAAGG
CAAGTACACTTCCAGCCTTGAAAAAGGGCTTTAAATTGAGCATGCCATTTATACAGGCAG
GAGTAACCCATGACAAAGTTATACGCAGAAATCGCAAGATGGAGACGACGACGACGA
CACGGTCAAGGTTTGGGGTTACGCTTCAAGCGAGGAAATCGATTTCGGACGGCGAAGTCAT
25 CGCGGCGGCGAGCTATGAAGGCGGCGATTCCCGATTATATGAAGTTTGGCGCGGGCGCGA
GATGCACGGCTCAAACGCTGCGGGAACGGCAATTGAAATCAACGTGGAAGATGACGGCAG
AACCTTTTTCTGTCGCGCATATCGTCGATCCCGTTGCCGTGACGAAGGTCAAACAGGCGT
TTACAAGGGCTTTTCCATCGGCGGCGAGCGTTACCGCCACGATGAGTTGAACAAGTCGCA
AATCACGGGTTTGAAGCTGACGGAATCAGCTTGGTTGACCGACCCGCAATCCCGATGC
30 GGTGTCTACCTGCTTTAAGGCGGACAAAGGTGCGGAAGCGGTAAACAACGATACAGAACA
TAATGCTACATATTTAGCCATTTCCCTTCCAAACAAAAAAGCACCAGCGGCGCGGATG
CCCTTTCCCTTTACAGGTTCCCTATTTTATCCGCGGGCAGCACCAGTTTGGCTGGGGC
TTTTGGTGGCGGCGCGCGACCGAAGCCTGGTCTTCAGCTTCGCCAGCACCAGGGCC
GATGCCCTTTACCTTGGTCAAATCGTCTACAGACTTGAACGCACCGTTTTGCGCACGGTA
35 TTCCGCAATGGCCTTCGCCCTTCGCCGGGCGCTATGCCCGGCGAGCGCCTCCAACTCCTGCTG
CGAAGCCGCTTGTGTTTACCGCGCGAAGGGAGAAGGCGCAGGAGAACAGCATACAGAA
CAGCAGCAACATTTCTTCATGGTTTTCTTTAAGGGTTGCAACAATAAACCGCATCT
TGCGACGATAAAACGAGTCATTCTAAATGAATATCCCAAAGTTTCAAGCCGTTCTCCG
CAACCCGACCGGACACCGTACGGATGCCGTCCCGCCATCACCGACATTTTTCCGGGCA
40 AAGCAACATTTTTCCGGGCAAGCAAAACCCCGAATAATCGGGGTTTTCTGAATG
GGTGTGTCAGTGACCTACTTTCGATGGAAGAACCACACTATCATCGGCGCTGAGTCG
TTTCACGGTCTGTTTCGGGATGGGAAGGCGTGGGACCAACTCGCTATGGCCGCCAACTT
AACTGTTACAAATCGGTAAAGCCTTAATCAATATATTCGGTAATGACTGAATCAGTCAG
TAAGCTTTTATCTCTTGAAGTTCTTCAATGATAGAGTCAAGCCTCACGAGCAATTAGTA
45 TGGGTTAGCTTCACGCTTACCGCGCTTCCACACCCACCTATCAACGTCCTGGTCTCGA
ACGACTCTTTAGTGGGTTAAACCGCAAGGGAAGTCTCATCTTCAGGCGAGTTTCGCGCT
TAGATGCTTTACGCGCTTATCTTCCGAACCTTAGCTACCCGGCTATGCAACTGGCGTTA
CAACCGGTACACCAGAGGTTTCGTCCACTCCGCTCCTCTCGTACTAAGAGCAGCCCCGTCA
AACTTCCAACGCCACTGCAGATA

50

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 72>:

gnm_72

TAAATGGGACTATAAGCAGGAAGGCTTAACCAGAGCCGGTGCAGCGATTGTTACCATAAT

CGTAACCGCACTGACTTATGGATACGGCGCAACCGCAGCGGGCGGTGTAGCCGCTTCAGG
AAGTAGTACAGCCGAGCTGCCGGAACAGCCGCCACAACGACAGCAGCAGCTACTACCGT
TTCTACAGCGACTGCCATGCAAACCGCTGCTTTAGCCTCCTTGTATAGCCAAGCAGCTGT
5 ATCCATCATCAATAATAAAGGTGATGTGCGCAAAGCGTTGAAAGATCTCGGCACCAGTGA
TACGGTCAAGCAGATTGTCACTTCTGCCCTGACGGCGGGTGCATTAAATCAGATGGGCGC
AGATATTGCCCAATTGAACAGCAAGkTAAGAACCGAAGTGTTCAGCAGTACGGGCAATCA
AACTATTGCCAACCTTGGAGGCAGACTGGCTACCAATCTCAGTAATGCAGGTATCTCAGC
TGGTATCAATACCGCCGTCAACGGCGGCAGCCTGAAAGACAACCTTAGGCAATGCCGCATT
10 AGGAGCATTGGTTAATAGCTTCCAAGGAGAAGCCGCGCAGCAAAATCAAAACAACCTTCAG
CGACGATTATGTTGCCAAACAGTTCGCCACGCTTTGGCTGGGTGTGTAGCGGATTGGT
ACAAGGAAAATGTAAAGACGGGGCAATTGGCGCAGCAGTTGGGGAAATCGTAGCCGACTC
CATGCTTGGCGGCAGAAACCTTGCTACACTCAGCGATGCGGAAAAGCATAAGGTTATCAG
TTACTCGAAGATTATTGCCCGCAGCGTGGCGGCACTCAACGGCGGCGATGTGAATACTGC
GGCGAATGCGGCTGAGGTGGCGGTAGTGAATAATGCTTTGAATTTTGACAGTACCCCTAC
15 GAATGCGAAAAAGCATCAACCGCAGAAGCCGACAAAACCGCACTGGAAAAAATTATCCA
AGGTATTATGCCTGCACATGCAGCAGGTGCGATGACTAATCCGAGGATAAGGATGCTGC
CATTGGGATAGCAATATCCGTAATGGCATCACAGGCCGATTGTGATTACCAGCTATGG
GGTTTATGCTGCAGGTTGGACAGCTCCGCTGATCGGTACAGCGGGTAAATTAGCTATCAG
CACCTGCATGGCTAATCCTTCTGTTGTACTGTATGGTCACTCAGGCTGCCGAAGCGGG
20 CGCGGGAATCGCCACGGGTGCGGTAAACGGTAGGCAACGCTTGGGAAGCGCCTGTGGGGGC
GTTGTGCGAAAGCGAAGGCGGCTAAGCAAGCTGCTCTAAAGAAACAATAACAATTGGC
AAATTTAGCCAAAGCAGAACAGCAGATTTTATCCGTATTGCCAACGCGATACGCAACT
GGATGCATGGAAGACGGGATTAAACAATAGAGTAAGGAAAGGAGCAGGCTTGCTTGATGC
AAGTAATGATTCCGATAACCATTAACGGAAAAACCATCAACCTGTACAAGCCATAAGCTT
25 AAAGGGAGCACCCGTTTACAGCGCGTAAGCGAACAGGAGATTTTTCGCTTTATCGGCA
GATGACTGGCCAGAATCCGAATTTTAGAGTTTTCCTGACGGAAGATTAGCAAATGGCAT
TATCAGTACTGGAGAATGGGCAGGAACAAAAATTGCATTAAAGAAATTTTCAAAAACAGA
GAATTCAACTCAAGCAGATGGACATTAGATTTCAGAATCCTCCATCATTTATTAAGG
TACTAAATTGGAGCTTAAATTCCAATAATTACAAAGGATTTTACCGTGGATGAGAAACA
30 AAAAAATTAGATTCTTGATTTCAAATCGATTATCCTCAATTTTAACTCTTATAAAAA
TCAAATGGGTATTAAATTCAAGATGAAACTTAAAAACAATTTCTGTTCTTTTATGGA
AGAAGTGTAAATGACGGTCAATCCGTTTACATGATTATACCGACGGTATCGGAATTCC
TCTAACTGGAACCTTCAAAGAACAGTGCAGAAATTGAAAGACATATGGCCTACTTTGGA
AGATGCCCCAAGCAATATGGCCTGAAGACCCCTTGGTATTACTTAGAATGGCTTTGGTGGGA
35 TATTGCGTGTCCAATAGATTTGGCCGATTTGCCGAATATTGATATTTATGAGCAAGCGTA
GGTATGGTTAGCCGCTTTAGCGGCGTAACCGTACGCATATCAGCAAACCTTTATAAAATA
ACAAGGCCGTCTGAAATCTGTTTTCAACTTTTTAGACGGCCTTGCAACTTGGCATTTC
ATTCGTACGGTTACGCgCTAAAGCGGCTAACCGTACCTACGAGCTCTGATAAAAAATGAT
TTATGGAAGCAAGCTGTAGCCTGCATGAAACCTAAAAATCCATGCGTAAGGTGTGTGCTTC
40 AGCGCGCACGCGTTCATGATTTACGGCTCAATGCCGTCTGAAAAGCTCACAAATTTTCA
GACGGCATTGTTATGCAAGTAAATATTAGATTCTCTGTATACTGTTTACAGACGCGTGCG
TGCTGAAGACACCTCCTACGCTTGCTGCAGAACTTTCGGGTAAAACCGGTGTGAGCATT
GCGCGCCGTATGCCAATGAAAACAGCCGCATCCTGCTGAGCACCACGGATATCAGTTCGG
AAAACGGCAAAATCAAACCTGCAATCCTACGGCGACCACTTCTACTACGCCGACAGGGTG
45 AGCTCTACACCTTCGATAAACGCAGCTATAAAACCGGTAAGTGGTACAAACTAAAACATG
TTACTGAAATCAAAGAGCATAAAAACGCCAAAGCCGACCCGGTGAGCCTCAGTGCGTCAC
AAGGTATTGAAATCAAATCCGGCGGCAATATCGGTGCCACGCCACCTTGTTTGATGCAC
CCCGCGGCTCCGTTAAATCGAAGCCGGACGTGGGCTGGTTCTATGCCGTGGAAGATC
TCAACTACGACAACTTGACACCGGTACCAAGCGCAAATTTATCGGCATTACCTACGACA
50 AGGTGCACGACACCACCCACCCATGAAAACCGCCCTGCCCTCAAGGGTAGTTGCAG
AATCGGCCAACCTGCAATCAGGCTGGGACGCCAACTGCAAGGCACCCAGTTTGAAACCA
CGCTGGGCGGCGCAGCCATCCGTGAGGTGTAGGCGATCAGGCACGAGCAGATGCCAAGA
TTATTCTTGAAGGCATCAAAGTAGTGTGCGCACTGAAACAGTAAGCAGTAGCAAATCTG
CCCTCTGGCAGAAAACAGGCGCGGACGCAATATCGAAACCTTGCAACTGCCAAGTT
55 TCACAGGCTCCGTTGCGCCCGTACTCTCTGCTCCCGCGGCTACATTGTGACATCCCCA
AAGGCAATCTGAAAACCGAAATCGAAAAGCTGGCCAAACAGCCCGAGTATGCCTATCTGA
AACAGCTCCAAGTAGCGAAAAACGTCAACTGGAACAGGTGCAACTGGCTTACGATAAAT

GGGACTATAAGCAGGAAGGCTTAACCAGAGCCGGTGCAGCGATTATCGCGCTGGCTGTTA
CCGTGGTTACTGCGGGCGCGGAGTCCGAGCCGCACTAGGCTTAAACGGCGCAGCCGAG
CAGCGGCCGATGCCGCCTTTGCCTCACTCGCTTCTCAGGCTTCCGTATCGCTCATCAACA
5 ATAAAGGCGATGTGGCAAACCCCTGAAGGAAGTGGGCAGAAGCCGCACGGTAAAAATC
TGGTTGTAGCGGCGGCAACGGCAGGCGTATCCAACAACTCGGTGCCTCTTCCCTTGCCA
CTTGGAGCGAAACCCCTTGGGTAAACAACCTCAACGTTAACCTGGCCAATGCGGGCAGTG
CCGCGCTGATCAACACCGCTGTTAACGGCGGCAGCCTGAAAGACAATCTGGAGGCAAATA
TCCTGGCGGCGATTGGTGAATACCGCGCATGGGGAGGCGGCGAGTAAGATCAAAGGACTGG
10 ATCAGCACTATGTGCCCCACAAAATCGCTCATGCCGTAGCGGGCTGTGCGGCTGCAGCGG
CGAATAAGGGCAAATGTCAGGACGGCGCGATCGGTGCGGCTGTGGGTGAGATTGTGCGGG
AGGCTTTGGTTAAAAATACCGATTTTAGCGATATGACCCGGAACAATTAGATCTGGAAG
TTAAGAAAATTACCGCCTATGCCAACTTGCGGCAGGTACAGTTGCAGGCGTAACGGGAG
GAGATGTCAATACTGCTGCACAAACCGCACAAAACGCGGTAGAAAATAATGCGGTTAAAG
CTGTTGTAAGTCTGCAAAAGTGGTTTATAAGGTAGCCAGAAAAGGATTAAAAACGGGA
15 AAATCAACGTTAGAGATTTAAACAGACGTTGAAAGACGAAGTTATAATTTAGCCGACA
ACCTGACCACCTTATTGACGAAACATTGGATTGGAACGATGCCAAAGCCGTTATTGATA
TTGTCGTCGGAACAGAGCTGAATCGCGCTAATAAAGGGGAAGCGGCACAAAAGGTCAAGG
AAGTTTTAGAAAAAATCGTCTTATATCCCTAATAAAGGTGCTGTACCGAATATGAGTA
CATACATGAAAAATAATCCTTTTGGAAAACAGCTGGCTCAAATTTAGAAAAGACAACGC
20 TTCCGACGCAGCAAGGGCAGTCTGTCTTCTTGGTAAAAAGAAACCAAGGTTATTAAAAA
GCCGGGTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 73>:

gnm_73

25 GATGATGACGAAATTTACAGACTGTACGCGGTCAAACCGTATTAGCCGCCAACCCACAG
GGGATACATCTTGA AAAACAACAGACAAATCAAACCTGATTGCCGCCTCCGTGCGAGTTGC
CGCATCCTTTCAGGCACATGCTGGACTGGGCGGACTGAATATCCAGTCCAACTTGACGA
ACCCCTTTCCGGCAGCATTACCGTAACCGCGCAAGAAGCCAAAGCCCTGCTAGGCGGCGG
30 CAGCGTTACCGTTTCCGAAAAAGGCCTGACCGCCAAAGTCCACAAGTTGGGCGACAAAGC
CGTCATTGCCGTTTCTCCGAACAGGCAGTCCGCGATCCCGTCTGTTGTTCCGCATCGG
CGCAGGCGCACAGGTACGCGAATACACCGCATCCTCGATCCTGTGCGGCTACTCGCCAA
AACCAAATCTGCACTTTACAGACGGCAAGACACACCGCAAACCGCTCCGACAGCAGATC
CCAAGAAAATCAAACGCCAAAGCCCTCCGCAAACCGATAAAAAAGACAGCGGAACGC
35 AGCCGTCAAACCGGCATACACGGCAAAACCCATACCGTCCGCAAGGCGAAACCGGTCAA
ACAGATTGCCGCGCCATCCGCCCCGAAACACCTGACGCTCGAACAGGTTGCCGATGCGCT
GCTGAAGGCAAAACCAAATGTTTCCGCACACGGCAGACTGCGTGCGGGCAGCGTGCTTCA
CATTCCGAATCTGAACAGGATCAAAGCGGAACAACCCAAACCGCAAACGGCGAAACCCAA
40 AGCCGAAACCGCATCCATGCCGTCCGAACCGTCCAAACAGGCAACGGTAGAGAAACCGGT
TGAAAAACCTGAAGCAAAAGTTGCCGCGCCGAGCAAAAGCGGAAAAACGGCCGTTTCG
ACCCGAACCTGTACCGCTGCAATACTGCCGCATCGGAAACCGGTGCCGAATCCGCCCC
CCAAGAAGCCGCCGCTTCTGCCATCGACACGCCGACCGACGAAACCGGTACGCCGTTTC
CGAACCTGTGCAACAGGTTTCTGCCGAAGAAGAAACCGGAAAGCGGACTGTTTGACGGTCT
45 GTTCGGCGGTTCTGACACCTTGCTGCTTGCCGCGGAGGCGCGGCATTAATCGCCCTGCT
GCTGCTTTTGGCGCTTGCCCAATCCAACGCGCGCGCGTACCGAAGAATCCGTCCCTGA
GGAAGAGCCTGACCTTGACGACGCGGCAGACGACGCATAGAAATCACCTTTGCCGAAGT
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AGATGGGGAATCTGAAGAAGAGTTATCGGCAAAACAAACGTTTCGATGTGAAACCGATAC
GCCTTCCAACCGCATCGACTTGGATTTCGACAGCCTGGCAGCCGCGCAAACGGCATTTC
50 ATCCGGCGCACTTACGCAGGATGAAGAAACCCAAAAACGCGCGGATGCCGATTGGAACGC
CATCGAATCCACAGACAGCGTGACGAGCCCGAGACCTTCAACCCGTACAACCTGTGCA
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AACCGTCGATACCGATTCTCCGACAACCTGCCCTCAAACAACCATATCGGCACAGAAGA
AACAGCTTCCGCAAACCTGCCTCACCTCCGGACTGGCAGGCTTCTGAAGGCTTCTCTC

GCCCGAAACCATCTTGGAAAAACAGTTGCCGAAGTCCAAACACCGGAAGAGTTGCACGA
TTTCCTGAAAGTGTACGAAACCGATGCCGTGCGGAAACTGCGCCTGAAACGCCCGATTT
CAACGCGCGCGCAGACGATTGTCCGCATTGCTTCAACCTGCCGAAGCACCGTCCGTTGA
5 GGAAATATAACGGAACCGTTGCCGAAACACCCGACTTCAACGCCACCGCAGACGATTT
GTCCGCATTACTTCAACCTTCTAAAGTACCTGCCGTTGAGGAAAATGCAGCGGAAACCGT
TGCCGATGATTTGTCCGCACTGTTGCAACCTGCTGAAGCACCGGCCGTTGAGGAAAATGT
AACGGAACCGTTGCCGAAACACCCGATTTCAACGCCACCGCAGACGATTTGTCCGCATT
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10 TTTGTCCGCACTGTTGCAACCTGCTGAAGCACCGGCCGTTGAGGAAAATGCAGCGGAAAT
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GCAGAAATTGCTGGAAGAAGCGGAAGGCGACGTACTCAAACGTGCCCAAGCATTTGGCGCA
15 GGAATTGGGTATTTGATTCCCAACTGCCCTTTCGAGATCAAGGATGCCGTTTCAGACGG
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20 GGCGGCTTCGCGGACGACGTTTCCGCCCTGCCGTTTACACGTTTCGAGGCTTCGTAGG
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25 CATTTTTTGTGTTCTTTCGGTGGTGGTTAAACTTCGATTTTATTTCGGGGTAAACGTCTG
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GCAACGGTACATCACGCTGCGCTGTAGCTGCCGTCCGATAACCGAACGCATCATGTCCGC
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30 CTTAAGCAGCAGGGATTTCTCGTACACGACATTGATCAGGTCAAGTTCGGGAAACGTCTG
CATATCTCTGTGAGCGGTTTTCGAGATTGCCACGCGGAGCATAGTATGGAGTTC
GTAAAGCTTCTCGCCGACCATGCTCAAGTATGCATGGTTTGTGCTCGATGGCGGCATA
GGCTTCGACGGCGGCAGGGAATTCCTTGTGCGTGTTCGATGTGCCCAAATCATGTT
GGCGGGGTGCATTTTTTGTGGCTTCGAGTGCCTTGGCGACATTGAAACGCGCGACATC
35 GAAATTGGACTTGAACAGCGCGGCTTGGGCAAGTTCGCAATAAACTGGGCGATTTCAA
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40 TGCCGGTGTATGTTGATGGCTTTGTGCTTTTCGCCACGCTGGCGGTAAAGTTTCCGAG
GGTGAGGTTCAAATCATACGATTGCCGCCGGCGTCGACGACTTCGCCAACTCCCTTGC
CGCGCGCCCGCTGTTGCGGTGACCAAGCGTCCAAGCTTTTATAAAATCCGAAGGGAT
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45 GGCTTTCTTAAGGCTGTTGGTAGATTGGGCGCATTTTGGCGCGGTGGTGGGTGAGT
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50 TGACGGTATAGATAAGTTTTCATGTTTGTCCGTAAATAAAAACGCCGCCAGACAGCTTC
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55 AAACATATCAGAATAAGAAAGGCTTTACATCATGAGCAGACCCGTACCCGCGGTATTCCG
CAGCGTTTTTACAGTCAAATGCCCGTCTCGCTACCGCGAAGGCAATGGCAGCCGAC
CGAATGGCAATCTTCCCAAGACCTCTCCCTCGCACCGGGCGGCACGCCCTGCACTACGG

CAGCGAATGTTTCGAGGGACTGAAAGCCTTCCGTCAGGCAGACGGCAAATCGTGCTGTT
CCGTCCGACTGCCAATATCGCGGTATGCGGCAAAGTCCGGACATTTGACCTGCCGCG
CCCCGAAACCGAAGCTTATCTTGACGCGTAATCAAATTGGTCAAACGTGCCGCCGATGA
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5 TATCGGCAAGGCCGCTTCTCCTTCCGAAACCGCCCTGCTGTATATTTGGCTTCCCCCGT
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10 ACCGCTGACCGACGAGTTTTTGACGCGGTAACCGCGATTCCGTACTGACGGTTGCCAA
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GGAAAACGGTGCGGAAGCCATTTTGACCGGTACGGCAGCCGTCATCTCGCCCGTTACTTC
CTTCGTATCGGCGGCAAGAAATCGAAGTGAAGGCAAGAACGGGCTATGCCATCCG
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15 AGTGTGCTGATGCTTTAAATAAAAAATGCCGTCTGAAACCCGTTTGGCGTTTCAGACGGC
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TAAACAAGCGTCCGCATTTCCCATCCCGCTGCCGTAAGTCGGGCATTTCCCTAGAAAT
ACGCTTCAGACGGCAAACGCCGCCGAAACCGATATGCGGCACGGACGGCGCACGGATT
TGAAAACGGCGGATTATCCCTCGGTGCTCAAGGCATTAATGCTGTAACCGCGTCAACGT
20 AAGTGATTTGCGCGGTATGCGGACGACAGGTGCGACAGCAGGAAGGCGGCGGTATTGC
CGACTTCTTCAATGGTAACGTTGCGGCGGAGCGGTTGTGGGCGGCGACGTGTCCCAAGA
GTTTGCCGAAATCGGCGATGCCGAGGCGCAAGCGTTTAAATCGGGCCGGCGAAATAC
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GGCTGGCTTTTGCCATACCCATCACGTTGTAATTGGAATCGCGCGCACCGCGCCCAAGT
25 AGCTCAGGGCGACGATGGCGGAATTTCTGCCGCGCATCATCGGACGGGCGGCTTTTGCCA
ACGCGGGGACGGCTGTATGCGGAAATTTCTGTGCGGTGTTGAACGCTTCGCGGCTGATGC
TGTCGAGGAAGTCGCGGCTCAAGGCTTCTTTCCGGCGAAAACCGATGGAATGCACCAAAC
CGTCCAAGCCGTCCCAATGTTTGCCCAAGTCGGCGAACACTTGGTTGATTTCTGTCGTCG
TGGCGACATCGCAGCGGAATACAAGTTCGGAATCCAATTCGCGCCCATTTTGCGGACGC
30 GCTCTTCCAGTTTGTCACACAGTAGGTAAACGCCAGTTCGCGCCTTGTTCGCGGACGG
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35 CCGCGCAACAATTCGTTGACGCTGGTTTTCGCACGGGTTTGGCGTCCACGCTTTGACG
ATGACGGCGCAGTAAAGGCTGTGGCTGCCGCTTTGGAAGGCATACTGCCGATACGACA
ACCGAACCTGCCGCTACGCGGCTTGATAGATTTCCGCGGTTGTACGGTCAAAGATTTTG
GTGGATTGACCGATGAACACGCCCCATAGAAATCACGCTGCCTTCTTCGACAATCACGCC
TCAACGATTTAGAACGCGCACCGATGAAGCAGTTGTCTTCAATGATGGTGGGTGCGGCC
40 TGCAGGGGTTGAGTACACACCGATGCCGACGCCCGCTCAAGTGCACGTTTTTACCG
ATTTGCGCGCAAGAGCCGACGTTGCCCAAGTATCGACCATCGCGCCTTCGTGACGAT
GCCCGGATGTTGACATAAGATGGCATCAGCACGACATTTTCGCCACAAAGCTGCCGCGT
CGGGCAACCGCACCCGGAAGTGCAGGAGCCTGCGTTTTTGAACCTGTTCTCAGACCG
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45 TTGCTTGGATGCGGAAGGACAGCAACACGGCTTTTTTCGCCCATTCGTTGACTTTCCAC
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50 CCACGCAAACGCATATTCGTGAGCAATACGCGAGCGGTTGCCAAACATTGGCGTTTCGGA
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5 TATCGAGCTGGTTAGCCACGCCGCGCAGGCGCAGGTTGTGGCTGTACGGAACGGCGG
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55 GTAACCACCTGGTTTTGAACAGAATCCTCAGCAAACCTACGCTCATACGACCTTATCCC
CAAATTTATTCAATGTTATACCTGTACAGCTTTTATAGTGGATTAAATTTAAACAGTAC
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AAGCCTGAAAATCATTTGATTTTACCGTCTTAAAGTGGTTTTTCAAGCAGGAAGA
AAAATTTTCAGATGGCAAAAAGCCCTCCAGCACTGAAAGGCTTATATCGGAACTTCC
CGCAACACGGGAAACAGACAAATGAATCGTCAAACCTCGCCAACAGGAATCGAACCTGT
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GAGATTTTAACCCTTTCCGACGACAAAGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 74>:

gmm_74

5 GGTATAGACACGTCCGTTGCGTTTCAGAATGCCGAAGACAACCACTTTTCCTGCTGCACC
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10 AACTTCCAGTACAAAAACGGAGCAGTTCTTTCTGTACTTTTTCTTTAATTTGCAGTGC
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45 GACATGTACAGCTTGCCGCCGATAATCGCCGTACCGTCCACTTTCAGCAGTTTGCCAAA
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50 TTGCCGTGAGTTGTCAGTTGGCTGCCGCTTTTTTTCGATCAGGCCGCCGTCCTGAAATG
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55 GGTGCGGAAAGGATGTTCCGGCAATTTGAATCGGGTTGTACGGGTGAAACGGACGCTT
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5 TCGTCTGTTTTATCACCGCCGGAATAGTCGAGCAACGCTTGGCGGTACTGCTCCTCCGAA
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25 AAGTGAATCGGTTCCGTACTATCTGTACTGTCTGCGGCTTCGTCGCCTTGTCTGATTTT
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40 ATAAACAGAACTGGTCAGACCAAACTCGCAATCGTTTGCCAAGGCGATGACTTGGTCGAG
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45 GGCAGGTTGCCGTAGCGCACGCCTTTCATCGCGCGGTCATTTTTTCAATGAATGCGTC
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55 CCATTCCGCTGATAATCGAGATAGTCGGCGGTGAACATGACTTCACGCGTGCCAAGTC
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CGGTTGCGCCGACGCGCCGCGGACGGCGGGTCAACGTCCGCCTTGCCGCCTTTGGG
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ATCGTTTTCAAAGCGTCCGTTGATGTACATGGCCAATTGTTTCATTTCGGGTTCTCCAGT
TTTGTAGTTAGATGTAGTTTATGTTTATCCCAAATAAATTGC

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 75>:

gnm_75

10 GATCTAAGCGACACAGCCGGGGCGAACACTGAGGCAATCTACACTTCAGACGGCATTACC
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CAAAACCTGCTGATTTCGTGGCGACAATCTAGAAGTGTGAAACACTTAAAAACGCCTAC
15 ACAAACAGCGTGAAGATGATTACATCGACCCGCCCTAAAAACACCGGATCAGACGGCTTT
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20 GTGTTGGGGAAGGGAATTTGTTGCACAATTGCCTTGCGGAAAAAGAACAGCTAAATCA
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25 ACTTGGCGTGTAACCAAAGATACATTTCAAGATTATTATAATAAAGGAAAAATCGTTTTT
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30 AAAATATTTACCTTCCCCAAGCCTAGTCAATTGATTAAATTTTAGTTTCAATAAGTTCA
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25 AATTTCCACGACGCAACGGCAAATTCGACCAGCGCTTTTAAACCGCTACCTTTCCCAA
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GCCAAGTCAAAGTGTCTGAAGCCGATTTCGAGAAATTTATAATGCCAACAAAAAGAC
30 TATCTGCTGCCGACGGCGTCAAATTGGAATATGTGCGCTTGAATCTGAAGGATTTTGCA
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35 ACCCAAGAAACTTGGCTGAGTAGGCAGGACGCGCAAATGTCCGGTATGCCCGAAAACCTG
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ATCAACAGCGAAACCGCGTGGGTGCTCCGCGCAAGAGTCCGCGAAGAGAAAAACCTG
CCGTTTGCCGAAGCCAAAGACGCGGTACGTGAGGCTTATATCCGTACCGAAGCCGCCAAA
CTTGCCGAAAACAAGGCAAAAGACGTGCTTACCCAACTGAACGGCGGCAAGGCTGTTGAC
40 GTGAAATGGTCCGAAGTGCTCGTTTTGGGCGCACAGCAGCAAGGCAGTCCATGCCGCCC
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15 GGTGGAATACGGCGACAAAATGCCGGCAGGCAAAATTTGAAGATCTGATTCCGGCGAGTT
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20 GCTGAAGCTCGCCGATCCGCAAAACGCTCCCGCCTTGACGGCAACACTGATTCCGGAGGC
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35 TTCTGATCGGCAAAAAAGCCGTGAAGAGGCTGCGGAGGCGGCAATGGCGATGCTGGA
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55 AAAGCGGTCAAACCGCGCGCGCGTGATTCTGCTGGGGGATGAAAACAGCTCCCGTCC
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CGGTTTCCGGACGAACCTGGAACATTCGGAATGCAGTCCGAACGCTCGAGTCGAAAGGTTG
TACCGGGCACACAAAGCCTATTGGCAGGCGGTAAAAGACGGCAATATCGAAGCCGCATAC
5 CGGGGCATTTCCGATATCGTGGTTCTCCTCCTTGCATCGGGATGCCGATTTTACCGCGTT
CAACCCAAAGCGGAAAACACACCATCAGAAACGGGGCGGCGATATTGACCACCACGCCGA
AGCTGGACGCTACCGGCACGACTTCCAAGACGCCCGCAGTCTGAATCACGGGCAATGTAA
AA

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 76>:

gnm_76

GGCAGGCATTTTGGCGTACACCGTCATCCAAATCTACTATATGAGCCGGGACGGGCAGTC
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15 TGTCGGCACGGTTTGGTACGCGAAATCGCATGGTCGGTTTGGTTGCCATTATTGCCGC
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25 GATCAATGCCGTAAAGCTTCCAAAAGCGTCATCACGCCCTTGGGCGTACACGGGCGCATCA
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35 CAAATCAAAAACCTATATTTTTCATCTTGGTGTCTTGAAAATAAATGTTGACGCATCTTT
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5 AGCAAGAATGCTGCTACAATATGTTTCGGAATATACGCGCGTGCAAGTTGTTGACGCGGGG
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15 GCAATCGCGCTGACCGACTTTTCAGACGGCCTAAGCTGCATCCGCACCTTGGCGCAAGG
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 77>:

gnm_77

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15 TTCAACCCCAATCTGAAACCGTATGGCGGCAAGCCAACAATACCAAGTGCCGCGCTTGG
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AAACCCGTTTGC CGCAAACCCCTGTACCTATCGTCATTCCGGTTGGTGCGGAAGACAAT
TCAGCGGTGTGGTTGATTTGTTGAAAATGAAATCCATCATTGGAATGAAGTCGATAAAG
GTACAACCTTTTACCTATGGCGATATTCTGCGCAATTGGTCGAAACTGCCGAAGAATGGC
20 GTCAAATATGATTGAAGCCGAGCCGAAGCCAGCAAGAACTGATGGACAAATACTTAG
GCGGCGACGAGCTGACCGAAGAAGAAATCGTAGGCGCGTTGCGTCAACGTACTTTGGCAG
GCGAAATTCAGCCTATGCTGTGTGGTTCTGCATTAAAAACAAAGGTGTTCAACGTATGT
TGGACGCGAGTTGTAGAATTGCTGCCAGCTCCTACCGATATTCTCCGGTTCAAGGTGTCA
ACCCGAATACCGAGGAAGCCGACAGCCGTCAAGCCAGCGATGAAGAGAAATCTCTGCAT
25 TGGCGTTCAAATGTTGAACGACAAATACGTCGGTCAGCTGACCTTATCCGCGTTTACT
CAGGCGTAGTAAATCCGGCGATACCGTATTGAACTCCGTAAAAGGCACTCGCGAACGTA
TCGGTCGTTTGGTACAAATGACTGCCGAGACCGTACTGAAATCGAAGAAGTACGCGCCG
GCGACATCGCAGCCGCTATTGGTCTGAAAGACGTTACTACCGGTGAAACCTTGTGTGCGG
AAAGCGCGCCGATTATCTTGGACGTATGGAATCCCCGAGCCGTAATCCATATTGCCG
30 TTGAGCCGAAACCAAGCCGACCAAGAGAAATGGGTATCGCCCTGAACCGCTTGGCTA
AAGAAGACCCCTCTTTCCGTGTCCTACAGACGAAGAAATCCGGTCAAACCATATTTCGG
GTATGGGTGAGCTGCACTTGGAAATTATTGTTGACCGTATGAAACGCGAATTCGGTGTGG
AAGCAAATATCGGTGCGCCTCAAGTGGCTTACCGTGAAACTATCCGCAAAGCCGTTAAAG
CCGAATACAAACATGCAAACCAATCCGGTGGTAAAGGTCAATACGGTCACGTTGTGATTG
35 AAATGGAACCTATGGAACCGGGTGGTGAAGGTTACGAGTTTATCGATGAAATTAAGGTG
GTGTGATTCTCGCAATTTATTCCGTCTGTCGATAAAGGTATCCGCGATACGTTGCCTA
ACGGTATCGTTGCCGGCTATCCTGTAGTTGACGTACGTATCCGTCTGGTATTCCGTTCTT
ACCATGATGTCGACTCTTCCCAATTGGCATTGGAATTGGCTGCTTCTCAAGCGTTTAAAG
AAGGTATGCGTCAAGCATCTCCTGCCCTGCTTGAGCCAATCATGGCAGTTGAAGTGGA
40 CCCCAGGAAGAATACATGGGCGACGTAATGGGCGACTTGAACCGCGTCGCGGTGTTGTAT
TGGGTATGGATGATGACGGTATCGCGGTAAAAAGTCCGTGCCGAAGTACCTTTGGCAG
AAATGTTCCGTTACTCGACCGACCTGCGTTCTGCAACCCAAGGCCGCGCTACTTACTCTA
TGGAGTTCAAGAAATATTCTGAAGCTCCTGCCACATAGCTGCTGCTGTAAGTGAAGCCC
GTAAAGGCTAATCAGAAAAGGCCGTCTGAAACTGAAATAAATTTTCAGACGGCCATTGT
45 TCTTTAATCGATCTTTATATGTAAGGAATTAGCTCATGGCTAAGGAAAAATTTGAACGT
AGCAAACCGCACGTAAACGTTGGCACCATCGGTCACGTTGACCATGGTAAAACCACTCTG
ACTGCTGCTTTGACTACTATTTTGTCTAAAAAATTCGGTGGCGCTGCAAAAGCTTATGAC
CAAATCGACAACGCTCCTGAAGAAAAAGCTCGTGGTATTACCATTAAATACCTCACACGTA
GAATACGAAACTGAAACCCGTCACGTACGCACACGTAGACTGCCCGGGGCACGCCGACTAC
50 GTTAAAAACATGATTACCGGCGCGGCACAAATGGACGGTGCAATCCTGGTATGTTCCGCA
GCCGACGGCCCTATGCCGCAAACCCGCGAACACATCCTGCTGGCCCGCCAAGTAGGCGTA
CCTTACATCATCGTTTCATGAACAAATGCGACATGGTCGACGATGCCGAGCTGTTGGAA
CTGGTTGAAATGGAATCCGCGACCTGCTGTCCAGCTACGACTTCCCGGCGATGACTGC
CCGATTGTACAAGGTTCCGCACTGAAAGCCTTGAAGGCGATGCCGCTTACGAAGAAAA
55 ATCTTCGAACTGGCTGCCGCTATGGACAGCTACATCCGACTCCCGAGCGAGCCGTGGAC
AAACCGTTCTGCTGCTCCTATCGAAGACGTGTTCTCCATTTCGCGCGCGGTACAGTAGTA
ACCGGCCGTGTAGAGCGCGGTATCATCCACGTTGGTGACGAGATTGAAATCGTCCGTTCTG

5 AAAGAAACCCAAAAAACCACTTGTACCGGTGTTGAAATGTTCCGCAAACTGCTGGACGAA
GGTCAGGCGGGCGACAACGTAGGCGTATTGCTGCGCGGTACCAAACGTGAAGACGTGGAA
CGCGGTGAGGTATTGGCTAAACCGGGTACTATCACTCCTCACACCAAATTCAAAGCAGAA
GTATACGTACTGAGCAAAGAAGAGGGTGGTCGTCACTCCGTCTTCGCCAACTACCGT
10 CCGCAATTTCTACTTCCGTACCACCGACGTAACCGGCGCGGTACTTTGGAAGAAGGTGTG
GAAATGGTAATGCCGGGTGAAAACGTAACCATCACCGTAGAACTGATTGCGCCTATCGCT
ATGGAAGAAGGCCTGCGCTTTGCGATTGCGAAGGCGGCCGTACCGTGGGTGCCGGCGTG
GTTTCTTCTGTTATCGCTTAATTGAAGGATATTGATAAATGGCAAACCAAAAAATCCGTA
TCCGCCTGAAAGCTTATGATTACGCCCTGATTGACCGTCTGACACAAGAAATCGTTGAAA
15 CTGCAAAACGTACCGGTGCAGTTGAAAAGGCCGATTCTTTGCCGACCAAAATCGAGC
GTTTCAACATTTTGCCTTCTCCGCACGTGAACAAAACCTCCCGTGAGCAATTGGAATCC
GCACCCACTTGGCGCTGATGGACATCGTGGATTGGACCGATAAACTACCGATGCGCTGA
TGAAGCTGGATTGCGCGCCGGTGTGATGTAGAAATCAAAGTCCAATAATTCGGACTAT
AAAAATCCCCAAGCAATCAATGCTTGGGGATTTTATGTTATGCCGAGACCTTTGCAA
20 AATTCCCCAAAATCCCTAAATCCCACCAAGACATTTAGGAGCACCTTCTCCAGCAAA
CCGCCCCAAGCCATGATTGCCAAGACATCGACCGGTTCCCACTATTGAAGTTGGACCGGG
TAATTGATTGGCAGCCGATCGAACAGTACCTGAATCGTCAAAGAACCCGTACCTTAGAG
ACCACCGCGGCCGTCCCGCCTATCCCTGTTGTCCATGTTCAAAGCCGTCTGCTCGGAC
AATGGCACAGCCTCTCCGATCCCGAACTCGAGCACAGCCTCATACCCGCATCGATTTC
25 ACCTGTTTTGCCGCTTTGACGAACTGAGCATCCCCGATTACAGTCATCAACCATATTCG
GTTTGTCCGAGAAAGATGCATACGCTGTGATGACCGGATACCGACCCGTTAAAGAGTCC
GACCTATGCCGTCTGAAAATTCAAAACGCTTCAGACGGCATATTGAAGATATTTCTGAT
ATTTCTGTTGATATTTCTTTGACTTGTGAGATATAATGCCGAGCTTGGTACATTTGTGCC
AAGTTTAACCTTTGCTCTGAAAAGACAGGCCAATCGTAGCCTGTCCCTTTACTTTAAAGGAA
30 AATAATCATGACTTTAGGTCTGGTTGGACGCAAAGTTGGTATGACCCGCGTTCGACGA
ACAGGGTGTCTGTTCCGGTAACCGTTTTGGATATGTCTGCCAACCGCGTTACACAAGT
AAAATCCAAAGATACTGACGGCTATACTGCCGTTCAAGTTACCTTTGGTCAGAAAAAGC
CAATCGTGTCAACAAAGCCGAAGCCGGGCACTTTGCAAAAGCAGGTGTTGAAGCCGGTCG
CGGTTTGATTGAGTTTGCTTTGACTGAAGAAAACTGGCTGAATTGAAAGCTGGTGACGA
AATCACCGTTTCTATGTTGAAGTCGGTCAACTGGTCGATGTAACCGGTACCTCTAAAGG
35 TAAAGGTTTCTCCGGCACGATTAAACGTCATAACTTCGGTGCCCACTTATTCGCTTGC
AGCTTGCCGCTGAAGCGTACCAATACAGACTCGGGCATATCGAGCGGCATTACGCCCGTT
CGGCGGCAATGCAACGGGTA

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 78>:

gnm_78

TTTTCTnTAGCAGGCATCAAACCTGCCGGCAGCATCGTCGGCATGGGCGTGCTGTTTGCGC
TTTTGCGAGGCGGGTTGGGTCAAAACGTCTTGGCTGCAACAGCTTACCGACGCGCTGATGT
40 CGAACCTGACGCTGTTCTCGTGCCGCCCTGCGTGGCGGTATCAGCTATTTGGATTGGA
TTGCCGACGATTGGTTTTCGATACTGGTTCCGCCTCCGCCAGCACTTTGTGCGTACTGC
TGGTTACGGGCAAAGTCCACCGGTGGATACGGGGTATTATCCGATGAACGAAATCCTCAG
GCAGCCACGCTTCTGCTTTTCTCAGCTTGCCGTGTACGCGCTTGCAGATTATCGTGCG
CACGCGCACGGGCAATATCTTCTGCAACCCCGTACTCGTCAGCACTATCGTGCTGATTGC
CTACCTGAAAATCCTCGGTATCGATTATGCGGTGTACCACAACGCCGCGCAATTCATTGA
45 TTTTGGCTGAAACCCGCCGTGCTGCTTCCGCTGCGGCTCTACCAAACCGCCGTAA
AATCTTCAACCAAGTGGCTGCCCGTCATCGTTTACAGCTTGGGGCAGCGTTACGGGCAT
TGTTACAGGGATGTATTTGCCAATGGCTGGGCGCGGAACGCGAAGTCGTCTCTCGCT
CGCGTCCAAATCTGTTACCAACCCCATCGCTATTGAAATCACCGCTCCATCGGCGGCAT
TCCCGCCATTACCGCCGCCACCGTCATATTGCCGGTCTGGTCCGACAGATTGCCGGTTA
50 CAAAATGCTGAAGAACACGGTCGTATGCCCTCGTCCGTGGGTATGTCGCTCGGCACGGC
TTCGCACGCGATGGGGATTGCCGCTCGCTCGAACGCAGCCCGGTATGGCGGCATACGC
GGGGCTGGGGCTGACGTTCAACGGCGTACTGACCGCGCTGATTGCGCGCTGCTCATCCC
CGTTTTGGGATTTGAACCCGTTTACAGCGCATTTACGCCCATGCTGTCTGAACCCGA

CACACTCGCAAGGAGAACCGTTATGGCTGTCAACCTGACCGAAAAACCGCCGAACAACT
GCCCCACATCGACGGCATTGCCCTCTACACGCCCAAGCAGGCGTGAAGAAGCCCGGGCA
TACCGACCTGACACTGATTGCCGTAGCCGCCGGCAGCACCCTCGGTGCAGTCTTCACGAC
CAACCGTTTCTGTGCCGCGCCCGTCCACATCGCCAAATCGCACCTTTTCGACGAAGACGG
5 CGTGCGCGCCCTCGTCATCAACACGGGCAACGCCAACCGGGTACGGGCGCACAGGGCAG
AATCGATGCTTTGGCAGTGTGTGCCGCCGCCGCCGGCAAATCGGCTGCAAACCGAACCA
GGTGCTGCCCTTCTCCACCGGCGTGATTCTCGAACCGCTGCCCGCAGACAAAATCATCGC
CGCCCTGCCCAAATGCAGCCTGCCCTTCTGGAACGAAGCGGCACGCCCATCATGACCAC
10 CGACACCGTGCCCAAAGCCGCTCGCGGAAGGCAAGGTGCGGCGACAAACACACCGTCCG
CGCCACGGGCATCGCCAAAGGCTCGGGCATGATTCATCCCAATATGGCGACCATGCTCGG
TTTCATCGCCACCGATGCCAAAGTTTCCCAACCCGTCCTCCAATGATGACGAGGAAAT
CGCCGACGAAACCTTCAACACCATCACCGTTGACGGCGACACCAGCACCACGACAGCTT
CGTCATCATCGCCACCGGCAAAAACAGCCAAAGCGAAATCGACAACATCGCCGACCCGCG
TTACGCCAACTCAAAGAATTGTTGTGACGCTCGCGCTCGAACTCGCCCAAGCCATCGT
15 CCGCGAAGGGCGAAGGTGCGACCAAGTTCATCACCGTCCGCGTCGAAAACGCCAAAACCCG
CGACGAAGCCCGCCAAAGCCGCTACGCCGTGGCAGCTTCGCCGCTGGTCAAAACCGCCTT
TTTCGCTCCGACCCCAACCTCGGCAGGCTGCTCGCCGCCATCGGTTATGCCGGCGTTGC
CGACCTCGATACCGACCTCGTGGAATGTATCTCGACGATATTTTGGTTGCCGAACACGG
CGGACCGCCGCAAGCTTACCCGAAGCACAAGGGCAGCGGTGATGTCGAAGGCCGAAAT
20 CACCGTCCGCATCAAGTGCATCGCGGACAAGCCGCCACCGCTCTATACCTGCGACCT
GTCGCACGGATACGTTTCCATCAACGCCGATTACCGTTCTGACCCGACACGGCTTCAGA
CGGCATACATAAAATGCCGTCTGAACCGCCGGACAACATACCATGACCTCCACATTCCCC
CGCCGCTCGCCCGCAAAATCCGCCAAACCCGCGCCTGTGCGGCAAAAGCATCGCCTTT
CTGTTCTTTTGGCAGGTTCCGGCACTCGTCGCCCTGACCGCGCTGTTTTTGGCCATCTT
25 GCCGATTTTGGCGTGGAACTGAACGCCAAACTGGTTCAACAATACCCGTGGTTGCGGTGG
GTCGCGCTTCTTTGGGCTTACCGCTTATTGCGTGGCTCACACGCAATTTCGCCCTTC
ACCGCCGGCAGCGGCATCCCGCAGGTCTCGCCTCACTGTCGCTGCCCTACGGCGCACAG
AAAACGCGGCTGATCCGCCCTCGGCAGACGCTGCTGAAGATTCCGCTAACCTTTTGGGT
ATGCTGTTTCGGCGCGTCCATCGGACGCGAAGGTCCGTCCGTGCAGGTGCGCGCGCAGTG
30 ATGGGCGCGTGGGGCGCGTGGTGCAAGAAACACGGCTTGGCATTCAAAGGGATGCAGGAA
AACGATTTGATGGCGGCGGGCGCGGCGGGCGGTTGGCAGCCGCGTTCAACGCGCGCTG
GCGGGCGTGATTTTCGCCATTGAGGAACTCGGGCGCGGCATCATGTTGCGCTGGGAGAGG
CAAAATCTTTTGGGCGTGCTCGCCTCCGGTTTCATACAGGTGCGCATTACGGGCAACAAC
CCGTATTTTTCGGCTTCAACGGCGGCGTATTGGAACATATCTTCTGTGGGTGCGACTG
35 TCCGGCTGGTTTGGCGCGGGCGGGCGGGCTGTTGCGACGTTGCTCTATCGCGTGCG
GCGGCTTTGACCGCGCAAGATACGCGGCTTCATCCGCAACCGTCCGCTGCTGCTGGCG
GCACTGATGGGGCTGCTGCTCGCCCTGCTCGGCACGTTCTACCAAGGCAAAACCTACGGC
ACCGGCTACCACGAAGCCGCCAAGCCCTGCACGGCATCTACGAAGCCCCCTTCGGACTC
GCCGCCGCAAAATGGCTCGCCACCGTATTACGCTATTGGGCAGGCGTTCCGGGCGGCATT
40 TTCCTCCCTCGCTGACCATAGGCGCGGTTTGGGCGAGCATATCGCCGCCATCGCCGAC
ATATCGCAGGGTGCAACATCATCGTCTCATCTGCATGGCGGCATTCTGGCGGGCGCG
ACACAATCCCCGATTACTTCCGCCGTGCTCGTCATGGAATGACGGGCGGACAAAGCCTG
CTGTTTTGGATGCTAATTGCCCTGCATTTTCGCCCTCGCAGGTTTCGCGCCAGTTTTCGCCG
CGTCCGTTCTACCACGCATCGGGAATGCGTTCCGCCAGCGCGTGCTTCAAGAAACCGCC
45 GCCCAAACCGGCAATGCGCCCGCAAGACCGCAACAGCAAAACAGCAAAACGGGAATGCCG
TCTGAAATTAACACGCCCCGATCAACGCCGCGCAGCCGCTTGATTGAATACCGTTC
CGCCGCGCTTGAAATTTAGCAACAATGCCGTCTGAACGACAGAATGCGGTTTTTCAGAC
GGCATTTCCCATCCCGATATTGCCCTAAACAAAACCGAAGCGTTTGCTATAATTCTATTT
TTTACCGCATACGCACCAATCATGTTTCCCGATTCTCCCAACCCCTCTCCAAAGACCGC
50 CACTTCTGCGTTCCGCCCTTCAAAAATCCCAACAAATACGGCGGTTGTCCAAAATCGAA
GAAAATACCGAAAATCGACGAAATCTTTTTGAAGCGTTTGGCAGCCTTGCCAAAACCC
GAATTCGACAAACCCCTGCCCGTTCACGAGAAGCTCGAAGAAATCAAAAAGCCATTGCC
AAGATCAGGTAACGATTATTTGCGGCGAAACCGGTTCCGGCAAAACACGCAGTTGCCC
AAGATTTGCTTGAACCTCGGGCGTGGGGCGGCGAGATTGATCGGGCATACCCAGCCGCGC
55 CGTTTGGCCGCGCGCTCCGTAGCAGAGCGGATTGCCGAAGAGCTGAAATCCGAAATCGGC
AGCGCGGTGCGCTATAAAGTACGCTTACCGACACACCTCGCGCGATGCTGCGTCAAG
CTGATGACCGACGGCATCTGCTGGCGGAAACGACAGCCGACCGTTATCTCGCCGCTAC

5 GACACGATTATCATCGACGAAGCGCACGAGCGCAGCCTGAACATCGACTTCCTTTTGGGC
TATTTGAAACAACCTCCTGCCGCGCGCCCGGATTTGAAAGTCATCATCACCTCGGCAACG
ATAGACGCAGAACGCTTCTCCCGACACTTCAACGGCGCGCCCGTTTGTAGAAGTGAGCGGA
CGGACGTATCCCGTCGAAATCCTCTACCGACCGCTGACCGGCAAGACGAAGACGACGCA
10 GAAGTGGAGTTGACCGACGCGATTGTCGATGCGGCGGACGAATTAGCGGACACGGCGAA
GGCGATATTTTGGTATTCTGCCGGGCGAGCGGAAATCCGCGAAACTGCCGAAGCCCTG
CGCAAATCCACGCTGCGCCGCAACGACGAAATCCTGCCCTGTTTCGCACGCTGTGCGAC
GCCGAGCAGCACAAAATCTTCCACCCCTCAGGCGGAAACGCCGCATCGTATTGGCAACC
AACGTCGCCGAAACCTCGCTTACCGTGCCGGGCATCAAATACGTCATCGACACCGGCCTC
15 GCGCGTGTAAACGCTATTCCGCACGGGCGAAAGTGGAGCAGCTTCATATCGAAAAATC
TCCCAAGCCGCGCCCGCCAAACGATCCGGCCGCTGCGGACGCGTCTCCGACGGCGTGTGT
ATCCGACTGTTTTAGAGAAGATTTAACAGCCGCCCGAATTTACCGACCCCGAAATC
GTCCGCAGCAACCTCGCCGCGTCATCTGCGCATGGCAGCATTGAAACTCGGCGATGTG
GCGGCATTCCCGTTTTAGAAATGCCCGATTACGCTATATCAATGACGGTTTTTCAGGTG
20 TTGTTGGAGTTGGGGCGGTGGAGCCGTCTGAAAACAGGCAGACATAAAAGAAAATCCG
CGTAGAGTGATGAACTTACCCCTGCTTTAATAAGTAGAAAATGGTGGGTTTACGTCCC
CCCCTGCGGCTACTAAAAAATATAAGAGTAACAACCTTTTTGAAAGAAAATGTATGG
ACGAAATTCAAATACCCAAAAAGTGAATTACAAACCAACTAGAAAATGAAAAGATTG
TTTATCGAAAGTTCTACCACGATTATTGTTGGTGCTAATGGCACAGGGAAAAACAAGAT
25 TAGCTGTTTATATTGAAGAACAATTAAAGGAAAAAGCACACAGAATTCGGCTCATAGAG
CATTAAATTAACCCCTAATGTCAATAAAATACCAGAAAAGAGTGCCAAAACATATCTAT
CTTATGGTCAGAACTGGGATGGAATCGATGTATCAATAGAAAAAATTATAGATGGGATA
ATAACTCATATACTCATTTACTCAACGATTTTGATTGGTTATTACAATATTTATTCGCTC
AACAAAATAATATTGCGGTAGCAAATAATCAAAGCTCAACCGTAATGAAAAGTAACCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 79>:

gnm_79

30 GCCCCTGGCTTCTTAAAGGTTGTCCGCCCAAATGCTCAATGACAAGGACTTGCCGTAAA
GCGGTAAGAAAACGTGTACTATTTCATAGGAGAAACCTTATGTATTTGAAATCTATAAA
GACGCAAAAGGCGAATACCGTTGGCGTTTGAAGCAGCCAAACCATGAAATCATCGCTCAG
GGCGAAGGCTACACCAGCAAGCAAACTGTGAGCAGCAGTCGATTGCTGAAAAGCACT
ACCGCCGCTACCCCTGTAAAGAGGTATAAAATCCGCTTTCACCCCTCAGCCCGCGCCCTA
CGCGGGCTTTTTTGTAGTTTCCGACTTTGCGGGAGTGATTGCCCGCCAGTCGCGCCAA
35 GCCTGATTTTGATTTTCCAACCTCCGCCACATAGCCACCAAACTCAGCGGCGTGTCCAAC
AGCGTGCCCGTCTTGCCGTCTTTCGGCGGATTGCGGCGTACCGGCGCGACCATCAATGCA
GCAGGCGGGGTGCGCATGACTGCCTTTTCGACAACCTTAATTTCCGTAGCCGAGGGCGCG
GTTGTAGAGCTGCAGGCCGTGAGAGCCAAAGCCGTCAATGCAACCGCGCTTGCATTTTT
ACGGTCTTGAGTAAGGACATTTTCGATTTCTTTTATTTTCCGTTTTCAGACGGCTGAC
TTCCGCCGTGTTTTTCGCCAAAGCCATGCCGACAGCGTGCGCCTTGACTTCATATTTTTT
40 AGCTTCCGCGCGTGCCAGTTCAGTTTCGCGCGCATAGTTTTGAGCCGACAACAGCAGGGC
TTGCGCCTTGTCGCGCTCCATCTTGTGATGACCGCCTGCTGCTTCGCAATGCCGACTT
GTAGCCTTGATGGTGCGACACAGCCAAGCCCGTGCCGACAAGCGCGATAATGGCAATCGG
TTGCCAGTTATTTCGCCAGCAGTTTCACGAGATTCAATCTCGACCTCCTGACGCTTCACGC
TGACAAATGAACGCCACCGCATAGCCCGCAATGCCAAATACACCGCCCAATTT
45 CCGCCGACGGATCGGGCAACATCACAACCTTAAACGTCCAGCCGCGCAGGCAACGTTTG
CCCACAGTTTCGAGTGCGACACATTGCCTGTGCGCGGGTTTTTAAAAATATCCAAATAC
GCATTGCTATTCCACACTTTTGGTTTGAGGTGCCGTTTCAGCATTTCCTCGATAATTGGC
CAGTTTCGCCCTCCGCAATTCAAACGCAGCCAAGTCCGCGCTGTTGCTTGCCTCACGGCT
TTTGGCCGACCACAGCCCAATCATCTTTTCGTAAACGCAACCTGTCCCATGATTAACGA
50 CGATTCTTGCGTTTGCGCGCCGACGTTTAGCAGCCGCCACGCCTGATTACCCAAGCGC
AGGCTCGGATGTTGTTTCAAAGAGCCTACCCGAACAGGGCTTGGCGTGATTGTTGATTTC
GGTAACGGTGTTACGCCAAAATCGTTTTTCAACTTGCACAATGGGCAACACATAAAGCA
ATCAAAGACTTTTTTCATACCTTCGCCGCTCCCAATTCCATCGCAATCGCGTCCGCAATCG

CGCGGCAGATGCCCCATTTGGTCGTCTTAAACAAGGCCAAATCAGTGTGCTTGCTGATGA
AAAAAGGCTCAAACACAATGCCGCTGCCTGCCGATAAGCCAGGCGCGAATGTTGCCCTG
CGTTATCCGGCTTAAAGCCGTCTTCGCCGCGCAGTTCCAGCCGGTTTTCTTGGCAACGG
5 CTTTGCCAGCAGCTGACACCAGCGTTATTTTCGGCGTGGACAAGGCTTCGATGCCTG
TCGCCGTTTTGTTCCGCCGCGCATTTGGTGTGGAACCAATCGCCACATCCGAGCCGCGAA
TCAGCTTGACCGCATCGCGCAGCGCATATTGCCCTTGCCCGTGCCGTCGGTTTTAACGG
TCAGGCCGTAATCGTTACGAGGATTGAAGCCACAATGTTGCGCATATCTGCGCCAAGT
CCGCCTCACGGTCGCTTCCGTTGACCGCACCCGGTTCGGTGTGCTGTGTCAGCGGTTA
10 AGGTTACGGTTTTGCCATTTCATCATCTCCAAAAATATTGATTGCATATAGTGGATTAA
CAAAAATCAGGACAGGCGACGAAGCCGAGACAGTACAGATAGTACGGAACCGATTAC
TTGGTGTCTCAGCACCTTAGAGAAATCGTTCTCTTTGAGCTAAGGCGAGGCAACGCCGTAC
TGTTTTTTGTTAATCCAATAACATTGAAAACCCCATTAACCGCTTTAACCCTCG
TCCCGAACGGTAGATGTTTCACCCCTGCAAAACCAAAAAAGACCGTCTGAATACAGACG
GCCAAAGCCTGGTCACATCACTGCCATAAATAAGCTGCCTGCTGTGCCGAGGTCCG
15 CTCATTTTCATTGATAATCGTATATCCCGTTTCGTGAAGAGATGCCGTATTTAGGGCATAGC
TTCGTATCGCCATAAGCCCGCTCTTCTATCAATATCGCGCAATTTGACAACTCCTGA
TAAAACCTATGGTTTTCTCAACTGTATTAACGCCTTGCCGCACCGTGGGACATACAATTCC
TCGCCACCATATACCTGCAACAGCTCATGTGTTTTCACTTCGCCGATGGCTTCGACCAA
ATTGCCAAACGCTCGGTGTCCACCTTGCCCTTACCAAATTTAAACCGCGCCCGCCAATC
20 GCCTTGACAGCTGTTCCGTGCTGCCAGTCCGATGACATCCACAATGTCCAACACGGTA
TCCGGCAATAAATGTTCAACTTTTTCGAACCCCATCATCCCCACCGCTTTTTCCGTTTT
CCTGTTTTCCGCAATCTGCAACGCAGCAACCAGTTTATGTAGCTGCGTATCGTCTAAATA
TTCGACCTTATCCTTACCAAACATCCGCCGCGCCATTGCGTGTGCATAGTTCCAATGTTT
GCCGCCGAGGTCAGCAGGCTTCGACTTTGTCCAACATTGCCGTGATGATGTCCGACG
25 CAGATGCGGTTTGCCGTGTGGGTACCTTTTGCTTTAGGCTTAAATCCGTGCCGACCGCAT
ATCAGCGACAACAGACTCAAGTTCGGAACATCCATATCCGCACACGACCGCTTGCCCGT
CACACGCTCCAACACCGCGGATAGGTACCGTCATCCAAGCCAGCTCCTTTTGAGCAAT
CTTAATTTTCGCAATCAACGCCCGCGCATCTCAAACCCATAAAACACAATATATAGTAT
TAAGCCGATGTTTTTTGCGAAACGGACAGACATAAAAAAGCAACTGTATTTTTACCCCG
30 TCGGGCAAAAATACCAAACCTCAAATCAAGCCGTTTAGATACCGTTTTCGGCGGTATCGT
TTTCGGCAAAAATATCACGCATCCGGGCATTTCGATATCGTCAGCAGTTTGCGCATACATG
CCGTAACGGCAACCTTATACGGCTTACCCTCGGACGGCAGGCGTTGGTAGAAATCCCGAA
TAAGCGGTTCAAACGTTGCGCTGCCACGGTAGCCATATACAGTGCCTTACGCACCGCAG
35 ACCTTCGCCCAAAGCAGCGGCTTTGAATTTGGTTTCCCGCTCTCCCTCGGGTGTGGGG
CAATGCCGACTAGACTCGCTATCCGTTTGTGCGACAGCCGCCCAATTTCGGGAACATCG
CCATCAGCGTAGCCGTGTTATCGAACCGATGCCTTTGATTGCTCTGCCACTTGGGCTT
TGCCGTCAAATGCGTGTGGGTGTGGTTGTGATTGTTTGTCCAATTCGTCAATCAGCC
GGTCAAATGGGCAATCAGTTGTTTGACGCTTTGCACTTGCGTTTCATGAACCTAATGCA
GACGGTTTTTCTCGGCAGTCCGCATATCCACAGTTGGTTGCGGCGGTTAACCAAGGCTT
40 CCAACACTTCTTCACTTCGGTGGGCGGGTGGTAGGGCATGGTTTGGCAATCTTCTTTCT
GTGCCGTATCTGTGCGAAGAAGGCGGGCATTTTGGCATCTTTGGCGTCGGTTTTGGTCA
CGGGCTGCGATTGGGCAAACTGATGCGTCTGACGCGGTTGGCGATAATCACGGCCCTGC
TCGGCGGATGGCTTTGGCGGCGGGGATTTGAGACCGCCGGTACTTTCCGTCACGACGAG
GGCGACCTTGTGTTTTTAAGGTATTCGATAGTATGGGCGATACCTTTGGGGTTGTTGGT
45 TTCGGTTTTGGTTTTAGACAAAGACGAAACGGCGATGACGAAGTTTCGTTTGGCGATGTC
GATATAGTGAATTAACAAAAATCAGGACAAGGCGGCGAGCCGAGACAGTACAAATAGTA
CGAAACCGATTCACTTGGTGCTTCAGCACCTTAGAGAAATCGTTCTCTTTGAGCTAAGGCG
AACCAACGCTGTACTGGTTTAGATTAAATCACTATACCTGCGTAATGGTATTGGGTACT
CATCATAAACCTGCCTTGCACTCGGTTGTTGTGCGGCAACTGTCCGGTTGTGTCGATG
50 GGTGCGCTGCCGCTCCCTGAGCTACGCAACGGTTGTGTGCTTGGGTGGGCGCGGGTGG
CGGCTGGGCGGTTTTGTTGCTATGATACGGTGATTCCAATATACAAGGTGGGCTTCAGTC
CACCGCTTCCGTGATTCCGTCAATGTTACCCATTTCCACCGTCCCCGCCGAAACCAAAA
CCGCCGACTCCCGCGGTTCTCAAATAATTTTATGTCAGCGGGCTGAAGCACCCCTGC
ATCCACCTTTTACGAATCCTCCTACACCTTATACAACACCTTGAAATCCACCTGTCA
55 GGAATACCCGAACCGTCATCCCTACCTTCGCAAAATAGCGCAAAATACCGTCTGAAAGCC
CTTCAGACGGCATTACCTGTTTATCTGCATCAATGGCGGAAATGGCGGATGCCGTTTAC
GACCATGGCGATGCCGTGTCGTGCGCTGCGTCAAAACTTCCTGATCGCGCATCGAGCC

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TGCCGGATGGATGATGGCTTTGATGCCCTGTTCCGGCAATCACGTCCACGCCGTCGCGGAA
GGGGAAGAAGGCATCGGATGCGGCACACGCCCGTTGAGGTCGAGACCGGCATCTTGCGC
TTTGCGGGCGGCGATGCGGGTGTGTCCACGCGGCTCATTGCGCTGCGCCGATGCCGTA
GGTTTGACCGCCTTTGCCGAATACGATGGCGTTGGATTTGACGTATTTGGCGACGTTCCA
GACGAACAGCAAATCGTTCCATTCTGCTCGGTGCGTGGCGTTGGAGACGACTTTCAA
ATCGGCGCGGCTGATGCGGTGGATGTCGGGCGTTTGACCAACAGTCCGCCGCCGACGCG
TTTGAGTTCGAAGCGGTTTGCGCCTGCCTCAAGCGGCACTTCCAATACGCGCACGTTTTT
CTTGCGGCGGCGGATTTTCGAGGGCTTCGGCGGTGAACTTAGGCGCCATGAGGACTTCCAT
AAACTGGTTGTGCGTAATTTGTTTACGGTTGCGCCGTCAACTTCGCGGTTGAAAGCGAT
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ATTGGAGGCGATGGCTACGCCGCACGGATTGGCGTGTTCACAATCACGCAGGCGGGCAC
GTCGAAGGATTTGACGGCTTCCCATGCGGCATCGGCATCGGCATGTTGTTGTAAGACAA
TTCTTTGCCTTGCAATTGTTGTATGCAGCGAGGCTGCCTGCGCGGGGTCAATATCGCG
GTAGAACGCGGCGCGCTGATGCGGGTTTTCGCCGTAGCGCATGTCTTGCACTTTAATCCA
GCTTTGATTGAACCGGCGCGGAATCCGGCGATTTCGGGCGTGCCGCTCAAGACGTCGTC
TGAAAGCGAGGTGAGTAATTTGGAAATCATACCGTCGTATTGGCGGTTATGGCTGAATGC
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 ATGGCGCGGTTGGAATTTTCGCTTGTCCGACGGCGGTGTAGAGGTCTTCTGGCTTTTGG
 10 TAGCCGAGATTTTCGGCAAGCTCTTGCAGGTTGGGTTGGGCGTGAGTTTGGCAAGCTGT
 TTGTCGAGTTGGACGCGGCTTCTTCGCGCACGGTGTTCGGCGTTTTCGTTGGCGGATGTAG
 GCGCGGATTTTGCCGATTGCCTTGTGGATTGACCCAGCCTTCGTAAGCCAGTTGACG
 GAAGGATGCCCTTCTTGGCGGTAATGATTTCGACGCGCTGTCCGTTTTCGAGCGGGTG
 GACAGCGGCACAACTCTGCCCTTCGACTTTCGACCGCGCAACGGTCGCCGATGCTGCTG
 15 TGCAGGGCGTAGGCGAAGTCGATGGGGGTGCGGCGCGTGGGCAGGGAGAGGACTTTGCCG
 TGCGGGGTCAAACATAAATCGTGTCTGTTGAAAAGCTCGGTTTGAAGCGGCGGCGAGG
 TCTTCCTTGGCGCTTTCGCCCATGTTTCGCGCCAGTCCAAGAGTTGGCGCAACCAGGCG
 ATTTCTGTTCTGATAGGCGGAATCGCCCTTGC CGCCCTCTTTGTAACGCCAGTGGGCGGCG
 ACACCGAATTCGTTGAATTGGTGCATATCGAAGTGCGGATTGTACTTCCACGCCTTTG
 20 TCTTCGGGCGGACGATGACGGTGTGCAAACTTTTATAGCCGTTGCCCTTTGGGATTGGCG
 ATGTAGTCGTGCAACTCGCCGGGAATGGGCTGCCAGAGCTGTGGACGATACCCAGCGTG
 GTGTAACACTCGGGGACGGTATCAACCAGAATTCGCACGGCGCGGATGTCAAAGAGGCCG
 TCGAAGCTGAGTTTTTCTTACCATTTTTTGTAAATGGAGTAGATGTGTTTCGGGCGG
 CCGGCGACTTCGAAATGGACATTGTATTCTTGAGTTCACCGCGCAGGATGTTGAGGAAG
 25 TTTTCGATGTATTCGAGGCGTTCGGTTCGCTTTTCGTTCCAAAAGCAGCGCGATTTCGCG
 TATTTTTCGGGCTTTGATGGCGGAAGCCCAAATCTTCGAGCTGCCATTGAGCTGCCAC
 ACGCCCAAACGGTTGGCGAGCGGGCGAAGATGTGAGGTTTCTTTGGCGACGGCGCGT
 TTTTCGGGGCTGTCGGGGCGTTTGCTTAAAAATTCAGGGTGC GCGTACGCATCGCCAGT
 TTGATTAACACGACGCGGATGTCGGTAACCATCGCCAGCAGCATTTCCGCATAGTTTCT
 30 GCCTGCTGGGCGGCTTCTTCGGCGTGGCGAGGCTGTCCACCCGGGCGAAGTGGGTGAGT
 TTCTGCACTTCGTCCACACCTTTGACCAGCTCGGCGACGCTACTGTTGCAGCGTTCGGAA
 ACCAATAGGTTCCAGTCGGGGACGTAGCGTCCGATGTCGGCAAGCAGGGTGGCGGCGACG
 GCATCGGGGAGCAGGTCGAGTTCATGAACCATTTGCCCGCGCCGAGGAAGTGGTTCGGGC
 AGCGGCTCGCCATACGGCGTGGCGGCATCGGCGGGTAATGTTCTGCGCCAGCAACCAT
 35 CCGGTACCGATGAGTTTTTATCGTTGTCCGGCAGAGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 80>:

gnm_80

CCAGGCTTGGGTCTGCACCATGTTGTTTTCTAAATATTGCTGCCTTTGAAAACTTTAA
 40 AACCGCCATCGAAATCACCGCCGCCGAATCGACGAGGCAAACGTCAGCCCGACTTTCAA
 ACCGAGGTAAACATTGGACGCAGTAATAATTACAGTGATCAATGCACCGAGTATCATGCC
 TCGGAGCGTCAGCTCGCGGTATTCTTCTACCGAACTGGATAAAGATTTATTCATTATTCT
 TCCTTTGACAACAGACGTTTACATATTGTTGGCATCACGCCATGATGTCAAGTTTAAAA
 AGAACAGTTAAAAACAGTTATCCCACCCTGCCTCATACCCATTGAAAATAAAAACTATT
 45 TTTAAACAAATAAAAAACAGCCGTATCAAGGAGATTCCCCGATACGGCTGCTTGTTCGGA
 ACCTTAAATCAATCAACAAATCGCGCAGCTTGTCTAAAAACGATTTCTTGGCGGGTGT
 TTGGTTTTCAAGCCGGTAGAAATCCGCTCAAATCTTCCAAAAGCTCTTTTGACGGTC
 GGTCAAATTGACAGGCGTTTCGACAACAAATATGGCAGTACAAATCGCCGGTCCGCTGCT
 CGTTAAAGATTTGACACCTTACCCTTACCGCGCATCCTCTGCGGTTTGGGTTTCTTT
 50 GGGGACGGTGAGCTTGACCTTTCGCTCCAAGGTCCGCACTTCCAACCCCCGCCAAAGC
 AGCCGTGGCAAACTGATCGGCAGTTCGCAATGCAAGTCCAGACCGTCCGCTTGGAAAT
 CTTATGCGCCCGAATCGGACGTTACATACAAGTCCCGGCGAGGCGACCGTGCATACC
 CGGCCGCTTCGCCGCTCAAACGGATACGCTGCCCGTCATCGATACCGCGGGAATATT

-607-

GACTTCCACCGTCTTGACCGCCTTATCCGCCCGCGCCACGGCATTGACGCAAGGTTCT
TTTAATGTGTTTGGCCGACCGTGGCAGGTCCGACAAGTCTGCTGCATACGGAATTCGC
CTGCTGGATGTGCACCGTACCCGAACCTTTGCAAGTCGGGCAGGTTTCCGGGGATGTCCC
CGGTTCGCGCCACTGCGGTTACAGACATCACACGCTTCATAAGTCGGAATATTGATGCG
5 TTTCTTCACACCTTTTGGCGCTTCTTCAAGCGTGATTCGATACCGACTTGAACGTCTC
ACCTGATAATCAGGCTGGGCGCGCCCCGAACCGCTCCAAACATTTGGCTGAAAATATC
CCCAAAGTCAAAACCTGCGCACCGCCAAATCCGCCAAACCTCCGAAGCCCCCTGTCC
GCCGCTTCAAACGCCGCATGACCATACTGGTCGTACATAGCGCGCTTTTCTTGTGCGA
CAAAGTTTCATACGCCCTTTGTACTTCTTTAACTTCTTCCGCTCTTTATTGTCAGG
10 ATTGCGGTGCGGATGGTATTCATCGCCAATTTCCGGTAGGCTTTTAAATCATCATC
GGTAGCTGTTCTTGCCACCCAGCGTCGCATAAAATCTTGATTACTCATTTTTCATC
TAATTCAAAATAAAATCACGGCTCAAATAAGGGCAATTGCGCAAAACACAAGACAAACA
GACTGCCATAGCTTACAACTGAAACGGAATACACTTTTCAGACAGCATAAACCGATGCC
GTCTGAAATCTTCAGGTATGCACGACACAAAACCTTAGATAGGCATAAAACCAACGCCA
15 TGAAGTGTGTTTTGTTATAAAAACGCCGCCGCAACGCATGTTTCAGACGGCATTGATGCGG
CTGCAGACTTCCCCCTATTTTATTTTTATCCGCGGGCAGCACTGGTTTGGCTGGGCCTT
TTGGTGGCGGGCGCGCGACGGAAGCCTGATCCTTCAGCTTCGCCAGCACCGCAGGGCCTA
TGCTTGGCAGCGCCTCCAACCTCTGCTGCGAAGCCGATTGATGTTTACCGCCGCAAGGG
AGAAGGCGCAGGAGAACAGCATACAGAACAGCAGCAACATTTTCTTCATGGTTTTCTCTT
20 TAAGGGTTGCAACAATAAACCGCATCTTGGCAGGATAAACGAGTCATTCTAAATGAA
TATCCCAAAGTTTCAAGCCGTTCTCCGCAAAACCGACCGGACACCGTACGGATGCCGTC
CCGCCATACCGACATTTTTCGGGGCAAAGCAAAACATTTTTCGGGGCAAAGCAAAAC
CCCCGAATAATCGGGGGTTTTCTGAATGGGTGTTTGGCAGTGACCTACTTTCGCATGGAA
GAACCACACTATCATCGGCGCTGAGTCGTTTACGGTCTGTTGGGATGGGAAGGCGTG
25 GGACCAACTCGCTATGGCCGCCAAACTTAACTGTTACAAATCGGTAAAGCCTTAATCAA
TATATTCCGTAATGACTGAATCAGTCAGTAAGCTTTTATCTCTTGAAGTTCTTCAAATGA
TAGAGTCAAGCCTCACGAGCAATTAGTATGGGTAGCTTCACGCTTACCGCGCTTCCAC
ACCCACCTATCAACGTCCTGGTCTCGAACGACTCTTTAGTGCGGTTAAACCGCAAGGGA
AGTCTCATCTTCAGGCGAGTTTCGCGCTTAGATGCTTTCAGCGCTTATCTCTTCCGAACT
30 TAGCTACCCGGCTATGCAACTGGCGTTACAACCGGTACACCAGAGGTTGTCCTACTCCGG
TCCTCTCGTACTAGGAGCAGCCCCCGTCAAACCTCCAACGCCCACTGCAGATAGGGACCA
AACTGTCTCAGCATGTTTTTAAACCCAGCTCACGTACCACTTTAAATGGCGAACAGCCATA
CCCTTGGGACCGACTACAGCCCCAGGATGTGATGAGCCGACATCGAGGTGCCAAACTCCG
CCGTCGATATGAACTCTTGGGCGGAATCAGCCTGTTATCCCGGAGTACCTTTTATCCGT
35 TGAGCGATGGCCCTTCCATACAGAACCCGATCACTATGTCTGCTTTCGCACCTGCT
CGACTTGTGCGTCTCGCAGTTAAGCTACCTTTTGCCATTGCATATCAGTCCGATTTCCG
ACCGGACCTAGGTAACCTTCGAACTCCTCCGTTACGCTTTGGGAGGAGACCGCCCCAGTC
AAACTGCCCTACCATGCACGGTCCCCGACCCGATGACGGGTCTGGGTTAGAACCTCAAAG
ACACCGGGTGGTATTTCAAGGACGGCTCCACAGAGACTGGCGTCTCTGCTTCTAAGCCT
40 ACCACCTATCTACACAAGTGACTTCAAAGTCCAATGCAAAGCTACAGTAAAGGTTACG
GGGTCTTCCGTCTAGCAGCGGGTAGATTGCATCTTCAACCACTTCAACTTCGCTGAG
TCTCAGGAGGAGACAGTGTGGCCATCGTTACGCCATTGCTGCGGGTCGGAACCTTACCCGA
CAAGGAATTTGCTACCTTAGGACCGTTATAGTTACGGCCGCCGTTTACTGGGGCTTCGA
TCCGATGCTCTCACATCTTCAATTAACCTTCCAGCACCGGGCAGGCGTCACACCCTATAC
45 GTCCACTTTCGTGTAGCAGAGTGCTGTGTTTTTAAACAGTCGCAGCCACTATTCT
CTGCGACCTCCGGGGCTTACGGAGCAAGTCCTTAACCTTAGAGGGCATACCTTCTCCCG
AAGTTACGGTATCAATTTGCCGAGTTCTTCTCTGAGTTCTCTCAAGCGCCTTAGAATT
CTCATCTGCCACCTGTGTGCGTTTGGGTTACGGTTCGATTCAAACCTGAAGCTTAGTGG
CTTTTCTGGAAGCGTGGTATCGGTTGCTTCTGTCCGTAGACACTCGTCTGCTCACTTCTC
50 GGTGTTAAGAAGACCCGATTTGCCTAAGTCTTCCACCTACCGGCTTAAACAAGCTATTC
CAACAGCTTGCCAACTAACCTTCTCCGTCCCCACATCGCATTTGAATCAAGTACAGGAA
TATTAACCTGTTTCCCATCGACTACGCATTTCTGCCCTGCCTTAGGGGCCGACTCACCT
ACGCCGATGAACGTTGCGCAGGAAACCTTGGGCTTTCGGCGAGCGGGCTTTTACCCGCT
TTATCGCTACTCATGTCAACATTTCGCACTTCTGATACCTCCAGCACACTTTACAATGCAC
55 CTTTCATCAGCCTACGTAACGCTCCCTTACCATGCCGTTAAACCGGCATCCGACGCTTCGG
TTATAGATTTGAGCCCCGTTACATCTTCCGCGCAGGACGACTCGACCACTGAGCTATTAC
GCTTCTTTAAATGATGGCTGCTTCTAAGCCAACATCTGGCTGTCTGGGCTTCCCACT

TCGTTTACCACTTAATCTATCATTGGGACCTTAGCTGGCGGTCTGGGTGTTTCCCTCT
TGACAACGGACGTTAGCACCCGCTGTCTGTCTCCCGAGGAACCACTTGATGGTATTCTTA
GTTTGCCATGGGTGGTAAGTTGCAATAACCCCTAGCCATAACAGTGCTTTACCCCAT
5 CAGTGTCTTGCTCGAGGCACTACCTAAATAGTTTTCGGGGAGAACCAGCTATCTCCGAGT
TTGTTTAGCCTTTACCCCTATCCACAGCTCATCCCGCATTTTGCACATGCGTGGGT
CGGTCTCCAGTACCTGTTACGGCACCTTCAACCTGGCCATGGATAGATCACTCGGTTTC
GGGTCTACACCCAGCAACTCATCGCCTATTAAGACTCGGTTTCCCTACGCCTCCCCTAT
TCGGTTAAGCTCGCTACTGAATGTAAGTCGTTGACCCATTATACAAAAGGTACGCAGTCA
CACCCTAGGGCGCTCCCACTGTTGTATGCATCAGGTTTCAGGTTCTGTTTCACTCCCC
10 TCCCGGGGTTCTTTTCGCCTTTCCCTCACGGTACTGGTTCATCTCGGTCGATGATGAGT
ATTTAGCCTTGGAGGATGGTCCCCCATATTACAGACAGGATTTACGTCGCCCCGCCCTAC
TTTTCGTACGCTTAGTACCGCTGTTGAGATTTCAATACGGGACTGTCACCCACTATGGT
CAAGCTTCCAGCTTGTCTTCTATCTCGACAGTTATTACGTACAGGCTCCTCCGCGTTC
GCTCGCCACTACTTGCAGAACTCTCGGTTGATTTCTTTTCTCCGGGTACTTAGATGGTTC
15 AGTTCTCEGGGTTGCTTCTCTAAGTCTATGTATTCAACTTAGGATACTGCACAGAATGC
AGTGGGTTTCCCCATTTCGGACATCGCGGGATCATTGCTTTATTGCCAGCTCCCCCGCGCT
TTTCGAGGCTTACAGCTCCTTCGTCGCCTATCATCGCCAAGGCATCCACCTGATGCACT
TATTCAGTTGACTCTATCATTTCAGAACTTCTTTGACTTTGCCTAACATTCCGTTGACT
AGAACATCAGACTTGAATTTCTACTTTGATAAAGCTTACTGCTTTGTTGTGCTTAATC
20 CTGCCTTTTGTTTTCAGGATTAAGTCGATACAATCATCACCCTAATCTGTTTGTGTTT
TCTTTCTCTTGCAGAGATTTTATCCTTTGCAAGAATAAAAAATCAAAACAAACGCT
TTGTCTTTGTTTGTGATTTTCGGCTTTCCAATTTGTTAAAGATCGATGCGTTCGATATTG
CTATCTACTGTGCAATCAATCGAGCTG

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 81>:

gnm_81

CATGCTGAACGTTTGGCTGACATAAAGTTAAATGAGTCAGTCCGCTATAATTGATGAAAC
GGGTAAAAAAGTGTGTCATCGCCTGTTCTTCTTGTGCGATACGCTTAAATAAGACCAG
30 CAAATAAATGGGCAGGCCAATCAATAAAACATACCACGCTTGACATAATAAGGCGATGCC
AATCAGTTCGGGTATGATGTTAAAAAATAATTGGGTGGCGGAATGTTTTAAACAACCA
CGAAGCATTAAATTTGATGATTTGGTAAATATAGATTTTAACCGTCCAAATCTCCCCAA
CTGCTTAATAATCAATGACAATATCACAAACGAAGCCATCACCGTCAGCGTACCAATCAA
GGATATGCCATTAAGCAGTGTGAGAAAGCCATACCCAAACAAAACAGCCAAATAATA
AAGCGTATGAAGTCCGCAAGCAGCGTGAATTTGTTTTCGCTATTGTTTCGCCCTTT
35 GGCAATCAAGGCTTTTTCATGTTTAAATAGAGACGGCTAAAAATAACAGTCTGATGATAAA
AAACAGGCTTAAATGCTTAAATCATTGTCTATTGATGTTTTCATTGAAATTGAAATA
AATATAAATCGGATTAATGGTATTTTAAATTAATGATGTTTCAGACCATCATGCTCTATA
AACAATTCCCATTAAAGTCCGCGCGCAACCTGCTATAATAAGTCTGCAATCGGCGCAAT
CAATGCTTTGCGTTTATTGCCATCCCAAAATAATTGATGCTGCCTTAATTATAATACCAA
40 GATAAGTTTTTTTATTCAATAAAATACAAAGGGAAGCGTTCAGCCCATTTGCAACAGATG
CAATCCACCGATTATTTAAAAAACGGCAAGCCTTGCCCCCTTGCGGCAAGCCTGCAAT
GCCTTTAATGTCCGCGAGGCGCAAGCGTGGTGGCCGCAACCTGTGCCGTTTCGA
GCCATTGCTCGTCATCGCCGTCAAACCTTCCACTTCGTCAAACCTCGCCGCGTTCACCA
TGACGCACAACCTCTCAAGGCTTTCGCGCCTTCCACCCAAAAACAGGGAATGCCCGGCG
45 GCATATCGGGCGCAAGCAGTCCGCTACGCTTCATGCCACGCAATCCAATAGCCGTTGT
CCGTACGAGCAATTGTGCGTTTTCGTTGACCGACTCGCTTCCGTACCTTCCAGCATAC
GTTCCGCAATGTCCGGTTGAAAAGATAAAATCTGCATAAGTGTTCCTTTATATGATGGT
TTCCGTCAAAACAAGGTGTTATAGTGGATTAAATTTAAACCAGTACGGCGTTGCCTCGCC
50 TCGCGTACTATTGTACTGTCTGCGGCTTCGTCGCTTGTCTGATTAAAGTTAATCC
ACTATATTTTAAACATCGCGCCGCTTGAGAACTGCCAACCCTTTATAACAAATTTCG
TCTTTGCAACAACTTTCCATTCTTTCCGTTTTCGGACGGCATCGTTAAAGTAGTCCTT
CCTTTTCTTATTTTCAGCATTTGTTTATGTTAGCGCTCAAAACGCCCCGGCTACTGCCC
GGCTTCAAACCTAGCCTTGGTCTGACCGTATTGTGCTGTGCTGCTTGTGGTCTTGCCG

TTTGGCGATGATGGCGGCGAAGGCGGCGGAAATCGGCTGGGGCGGCTTTTGGAAACACGATT
GCCGAGCCGAACGTGTTGGCGGCGGTATGGCTGAGCTTGCGGATGTCGTTTTATGCGATG
CTGACCAATGTCGTGTTGGGCACGCTGGTGGCGTGGGTATTGGTGCCTTATGAATCCCG
5 GGCAAGGGTCTGGCGAACGCGCTGGTCGATTGCGGTTTGGCGTCCCGACGGCGGTTACG
GGTATCGCGTTGGCAACCCTGTATGCGCCCAACGGTTGGATAGGCCGTTTTTTTCGAGCCT
TTGGGCATCAAAATCGCGTTTACACCCGTCGGCATTGTTGGATTGCGCTGGTGCCTGTCAGC
CTGCCCTTTATCGTCCGCGCCGTGCAGCCGGTATTGGAAGAATTGTGGGCGAATATGAG
GAAGCGGCGGCAACTTTGGGCGCAAGCCGTTGGACTACGTTTCGCCGTGTCCTCTTGCCCT
10 GAAATCACACCGGCACTTTGACCGGCGCGGAATGATGTTTGGCGGGCAACGGGGGAA
TACGGTTCCGTGATTTTTATCGCGGGAACATTCCGATGGTTTCTGAAATCCTGCCGCTG
ATTATTACGGGCAAGCTGGAACAGTTTCGACGTGCAGGGCGCGTCCGGCGGTGGCGTTGTTT
ATGCTGCTGGTTTCGTTTGTGATTCTGTTTGGCTGAACGTGATGAGTGGGCGTTGGGC
AGGCGTTCCGGCGCGCAAGGGTTGAGGTCGTCTGAAATACCTGTTACCGTCATTCCCGCGC
AGGCGGGAATCCATTGGTGAATTTCCGCTGCCCTATTTATTTTCTGTTTTCTGTTGCC
15 TGCGGTGGATTCCCGCCTGCGCGGGAATGACGGTAGCTAGACGTTTTTATTCCCTTAATC
AATAAAGGTTGTCTGAAACGAATCCGCCCAAAAAACGGTTTTTCAGACGGCATCC
AAACATTTTAAACCAACCAAGAGAACACCGCCATGAACCCCTATTCCGCCAATCCCA
ACCTGACCGAACCAGCGCGGCTGCGCGTGTGCTGATTGCCGCGCGCTGGGCTTTCTGC
TGCTGATGCTGGTTCGTGCCGCTCGTCGCCGTGTTTTACGAAGCCTTAAAGGCGGTTGGG
20 ATTTGTACCTGAAATCCTTAAACGATCCCGAAGCGTGGTCTGCCATCAAATTGACGCTGA
TTACCGCGCTGATTGTCTGTTCCCGTCAATGCCGTATTGGGTGTGGCGATGGCGTGGCTGC
TGACCCGTTTTGATTTTCGCGGCAAGCAGTTGCTGACACCCTGCTCGATTGCGGTTTT
CCGTATCGCCCGTGGTGGCCGTTTGTGTTTCTGTTTTCGCGCGCATACGGCAT
TGGGTGGCTGGCTCGAAGCGCAAGGCATACAGATTATCTTCGCCATCCCGGTATTGTTT
25 TGGCGACGCTGTTTCGTTACCTTCCCTTTGTGCGCAGCGAAATCATCCCGCTGATGCAGG
CACAGGGCGACAGCAAGAACAGGCGGCTGATACTCGGCGCAAGCGGCTGGCAGATGT
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30 CATTCCGCTCTCCGGCGTATTGGCACTTTTGGCACTGGCGACGCTGGCGGTGCAGAACT
TCATTACAAATTCGAAGACAAAAAATCGCCGCGCGAAAGGAATGCAATATGAGTAT
CACCATCCAAACTTAAACAAACACTTCGGCAATTTTACGCGCTGAAAAACATCAACCT
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35 GCAAGACGTAACCGCAAAACATGTGCGCGAGCGCAAAGTCGGCTTCGTGTTCCAACACTA
CGCCCTTTTCCGCCATATGAACGTGTTTGACAACGTGCTTTTCGGTTTGACCGTATTGCC
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CGTGCAGCTCTCTATTGGCAAAATCCTATCCGACCAACTCTCCGGCGGCAACGCCA
GCGCATCGCCCTCGCCCGCGGCTTGGCGTCAACCCAAACTCTTGCTTTTGGACGAACC
40 CTTCCGGCGGTTGGATGCCAAAGTACGCAAGAATTACGCACCTGGCTGCGCGACATCCA
TCACAACCTGGGTGTAACAGCATCTGTTTACGCACGACCAAGAAGAAGCCCTCGAAGT
TTCCGACGAAATCGTCGTGATGAACACGGCAAAATCGAACAACCGGCAGCGCCGAAGC
TATTTACCGCAAAACCGGAAATGCCTTCGTTACCGAGTTCTTCGGCGAAACCGACGCTTT
TGAAGGACGCATCGAAAAGGCTTCTGGCATTACAACGGCTTCGCGTGGAAATGGACGC
45 GCAATACAAATGGCAGGAACAACCGCCACCGGCTATATCCGCCCGCACGAATGGCAGAT
CGCCGCGAACACGAAACACCGATGATTTGTGCCGAAATCGAAAAAATCCACGCCGTCGG
CGCATTGACGCATATTCTGGTAAACACGACAAACAGGACGTACATATCACGCTGGCAGG
CAGCGATGCCGCGGTTACCAATCGCCGAAGGCAAGAATTGAAGCTGATTCCGAAACA
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50 TGCCGTCTGAAAGGCTTTTACGACGCGATTGTGCTTTCAAGCGTCAGGCAAGAAACAGCTT
GTACGCGGCAATTTGCGTTTCTCTGATAGCTGTATCCAGACTTTCCAAGAAACCGTC
AAATGCGGCGGCATCGTGGCGGCGCACATCGATACCGACCAAAATCCGCCCGTAATCCGC
ACCGTGGAATGGGTAATGGAAGGCTAATATCCACCTCCCTGCATATGGTTCAAAAA
CGGTGCCAATCCCGGACGCTCCGGAACCTCAAACTGACCAACGCTCGTTTCTAC
55 TTTGTCCGTCGCCCTCCGACCATATAGCGGATATGGATTTTGGCAATCTCATTGTTGGT
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CGGGCCTGCCGCTGAAGTCCGACAAAGATATGCGCTTTTTCATCGTCTCCGTAGCGGTA

5 GTTGAAC TCGGTAATATTCCTATTTCCCAATATATTGACAAACTTAAGGAAGCTGCCGCG
TTCTTCAGGGATGGTAACGGCAAAAATACCTTCGTTGCCCTCGCCCAATTTCGCTCCGTT
CGAAACGTGGCGCAAAACGGTGAAAATTCATATTCGCACCGCTGGTAACGGCAATCAGGGT
10 TTGGTTTTCCGCGCCTTCTCGGGCGATATAGGCTTCAGACCCGCCAACGCCAACGGCC
CGCCGGCTCGGTAATGCTGCGCGTGTCTATCGAAAATATCCTTGACCGCGCCGCAAAACCGC
ATCGGTATCGACTGTAATGATTTTCATCCAAAAGTTCTTTGAGAGGCGGAAGGTTTCGTT
TCCGACGACTTTGACCGCAGTGCCGTCTGAAAACAGCCGACATCTTCAAATGGACGAT
TTCACCCGCTTCGACCGACTGCTTCATACAGCAGGAATCGTTGGTCTGAACGCCGATAAC
15 TTTGATTTCCGGACGGACCTGCTTGATAAATGCCGCCACGCCCGCCCAAACCGCCACC
GCCTATCGGTACGAATACGGCGCGGATTGGATCGGGATGCTGGCTGACAATTTCCATCCC
CACCGTCCCCTGTCCCGCAATCACATCAGGATCATCAAACGGCGCGATATAGGTTAACCC
TTCTTTTTCCGCCAACTCCATCGCATAATCGTAGGCATCGTTGTATGAAACGCCCCGCAA
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CATAACGATAACGGCACGGCAGCCCAAACGCTGTGCGGACAATGCCACGCCCTTGAGCATG
20 ATTGCCGCGCTTGCGCGAATCACGCCGAAGCGAGCGCATCTTTCGGCAACTTGACAT
TTTGTGTACGCGCGCGTATTTTGAACGAAAAACCGGCTGCAATCTTCGCGTTTCAA
AAGGATGTTGTTTTTCAAACGTACGAAAGGCTGCGTGCCGTTCCAAAGGCGTTTCGAC
CGCCACATCATAGACAGATGCCGTGAGGATGCGGATGAGGTAATCGGAATAAGGAAGGG
CGTGTTCATAATCAATATGGGATAATCGGTTTATTAATAATCGCAAAACCCAAAACCAT
25 CGCCCAAGACGGCGGAAATCAAGAAAAATCCGCCGATCAGACACCTAAGCGTATAAT
CGCAGACTGAAACACGCACACAATTAGAATATTTTCATGACAGCACATAAAATCCTGCC
GTCTGCTTTCCATCATCTTAGGCGTTTCTCACGCAACGGCTGCATCGCCCGCGCCCAAC
AGACCGACGGTACAGCGCCGCCACGTTCCAAACACCCGAAACCTCACAGCGGCACAC
ATCGTTATCGACCTTCAAAGCAAACAGATTTTATCCGCCAAAACATCAATACCCCTGTT
30 GAACCGGCGGCACTAACCCAACTGATGACCGCATATCTGGTTTTCAAAAACATGAAATCG
GGCAATATCAATCTGAAGAAAACCTTAAAAATACCCGAATCCGCATGGGCTTCAGAAGGA
AGCAGAATGTTTGTACGTCCCGGCGATACGGTCAGCACCGACAACTCTTAAAGGCATG
ATTGCACTATCCGCAACAGATGCCGCCCTAACCCCTTGCCGCGCGGCTGGGCAACGGCTCG
ATTGAAAATTTTGTGCAACAAATGAACAAAGAAGCCCGACGCTTGGGCATGAAGAACT
35 GTATTCAAAAACCCGACAGGCTTGAGTAGAGAAGGACAGGTTTCCACCGCCAAAGACCTC
GCCCTGCTGTCTGAAGCATTGATGCGCGACTTTCCGGAATATTACCCGCTGTTTTCCATC
AAATCTTTCAAATTCAAAATATAGAACAAAACAACCGCAATATCCTTTTATATAGGGAC
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40 ACACGCGCATCAGACAAACAGCAAGCTGCTGAACTGGGCATTGAGGCCCTTCGATACGCC
AAAATATATCCGAAAGGCAAAACCGTTGCCCAAATCCAAATTTCCGAGGCAGCAAAAAA
ACCGTCCGCGCAGGCTTCTCAAAGAAGCCTACATCACTCTGCCACATAAGGAAGCGAAA
ATGGCAGAACAAATCTAGAAACCATACAGCCGATTCCCGCCCCAGTAAAAAAGGGCAA
ATTTTAGGAAAAATCAAAATCAGACAAAACGGATACACCATTGCCGAAAAAGAAATCGTC
45 GCACTGGAAATGTAAAAAAGAGCCGGTGGCAAAGGCTTTGGGCGTGTCTGACAGGG
CAGTAATCTGCCGTTTCAAATATCCCGTTTTTCCAACAAATAAAGAAATGCCGTCTGAAA
CACGTTTCAGACGGCATAAAACAACAGGGCGGTACGTATTGCATACGCCGCCCTGCTG
CTGAAATCAATTAGCGTTTCTTACCGGTAACGGTAGCAACAGCCAGATTTTCGTTACGTT
TCAGGGAAACGCTTTCTACACCTTCAGGCAGTTTGATGTCTGACAAGTGCAGAATGTCGC
50 CGGCAACCACTTCAGCACAATCCAAATCCAAGAAAGCAGGGATGTTGGCAGGCAAGCAA
CTACTTCAACAGAAGTGTTTAAACAGAGATACGCGGCCGCTTGACGTTTGACCGCTTGGG
AATTTTCAGCGTTAACGATGTGCAGGGGAACACGGATGCGTACAAGTTGATCGGCTTTCA
CAGCTTGAAGTCGATGTGTGAACCTCGCGGCGGAACGGGTGCATTTGGAAATCACGGA
CGATAACGTCTTTGGTTTACCCTTTCAGGACAACTTAATCAACGCAGTATGGAAAGATT
55 CTTTTTCCAATGCGTAGAATACGGTTTTGTGATCCACAGCGATTGCAACAGGCTCTTGAC
CTTACCCTACAGAATGCCGGGGATTGGCCCTTCGCGACGCAGGCGGCGGCTCGCACCAG
TGCCTTGTGCTTCAGGAACAGAGGCTTGAATTTATAAGTCATGTTAAATACTCCAAGTT
AGGTAAAATCGCGTCATCGGCCGCGACAGCTTAAGACGGCTTCGGGCTTATGGCAGCA
ACATGCTGCCTGTCTCACTTCTTCATTGAAAAGATATGAGACGGATTCTTCATTGCTAA
TGCGGCGGACGGTTTTCGGCCAACAGACCGGCAATCGTTACCTGACGGATACGGTCGCAGT
TTTTCAGCGCTTCAGACAAAGGAATGGTATCGGTTACGACACCTGGTCGATTTCGGATG
AGCGGATACGGCTGACCGCTCTCCGGAGAATACGGCGTGGCTGGCATAGGCTAGAACAC

5 GTTCAGCCCCCGCTCTTTTCAGGGCGACGGCGGCTTTGCACAGCGTATTTGCAGTGTC
TCATATCGTCCACAATCAGACAGGTTCTACCTTGAATATCGCCGATGATGTTTCATGACTT
CCGCCACATTGGCTTTTCGGGCGGCGTTTGTTCGATGATTGCCAAGTCGGCATTTCAGGGATT
TTGCCACGGCGCGGGCGCGGACGACACCGCCGATGTCGGGGCTGACGACGGTCAGATTTT
10 CAATCCGCTGTTGTTTGTATGTCGTTCAACAGAATCGGGGTGGCATAAATATTGTCCACCG
GAATATCGAAGAAACCTTGAATCTGGTCGGCATGCAAATCGACAGTCAAAACACGGTCGA
TCCCTGCCGAATACAGCATATTTGCCACCAAGTTTGGCAGAAATCGGAACGCGGACGGAAC
CGGGACGGCGGTCTTGGCGCGCATAGCCGAAATACGGAATGGCTGTGGTAATACGACCTG
CCGAAGCACGCTTCAGTGCATCCGCCATCGTCAGGATTTCCATCAGGTTGTCATTGGTCG
15 GCGCACAGGTCGGCTGAAGGATGAAAACATCGCGCCGCGTACGTTTCCACAGTTTCGA
CGGCAACTTCGCCGCTCTGAAAACCTGGATACGGAAGCATTGCCCAAAGAAATGTCCAAAT
GCCTGACAACACGTTGTGCCAATTCGGGATTGGCATTGCCTGTAATACCATCAAACGTG
CGTACGCAGCCATATTCTCACCTGATTTTATGTTTAACTTCCGCTCAGAAAACACAATGC
TTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 82>:

GNMCB20F gnm_82

20 GCAGGTCGACTCTAGAGGATCCCCAGCAAATGGGGCAAGGTTCAAATAGGAACACCATCT
GCAGATTTTGGCATTATCACTTTAGATAGTGGCGATGGATATGCCGTTTCATGCCATCAT
CCCGAAATTTTACGCTAATCCTAAAAGAAGAAGGATTGGATGAAGATTCAAATCCGT
ATCGAAGGGCGCTCTCATCGCGATTGTGATGCTGAAGAACCAGTTATCCATATCGAA
GATAAACGCACCAATTGAAACCCCATGAAAACCTGCTGCCGTTTAAATCATCTACTGATGAT
TACTTAGGCAAATGTCCCCGTCCTCCCTTTTCAGACGACCTTTCATTGCGGAAACCGCC
25 GCAAAGGTTGTCTGAAAACCGTTTCCATCCCCGTTTACAAACAACCGAAAGCCCCAC
ATGATCTCTTTGAAAACGACACTTTCCTCCGCGCCCTGCTCAAACAACCTGTGCAATAC
ACGCCGATTTGGATGATGCGCCAGGCGGGCGTTATCTGCCCGAATACA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 83>:

gnm_83

30 CGGCGAAGCGCGCCGCGAAATCGCCGACTTTTAAATTGATGCCGCGCCTTCAGGCGAAA
AATGGGTCTTGAACGGAAGCCGGAATGTTGTCTATCCGAAATGTTCCAATTTTGAGC
AGATCAAACAGGGTTCTTATGTCGGTTCGACGGTTTTAAATCTGTTTCGTAGTCATTTACG
GCTTCAGGCTTTTGATTAATTTTTTAAAGACATGGGCAAGGTTGGGATTGATTGATGGT
TATTGATTTTGGTTTCTTCTCGGTTTCTTCTGGCTTTGTCTGCTGCTTTGATATTTAA
35 ATGACGTGTTTTAAATCAGGCTTTCAAACAACCTTTGAAAGGCAGAACAATGAACAAA
CCGTTTTATCAGCAGGCGCAGTTGGCACTTTATAAATATCAGCCGTCAAGCAAGTATTAT
GGTAAACAATGGCATATACTTTCGCTAGTGAGCTTTTGGATTATTCAAAGTTAATAAA
TTTATAATTCATGAAGAAATCCAATGTTTTTAAATAGAAGGATTTCTAATAATATTGG
AAAATTTATTTTCTGATGAGTCTGTTGCGTATATAAAAATTTAGAATTACAGGATGAT
40 TATAGTCGTGGAATTGAAATTAACCGTTTGATTTTAAATCTAATGTTGGGGATGTTTTT
GGTTAATCTTATGCTGAACGTTTAAAGTATCCTATTGGAATTCAGATGTTAGATTGGA
TATTGATCATAAAAATCTGATGAGTCTGTTGCGTATATAAAAATTTAGAATTACAGGATGAT
TCAATTTACGAACCTTCAATAATAGAACACGTGCCAACAGGTGCACGCTCTCTTGAAAA
AGTCCCCGTTAAATTTACCGCATCAGTTTCCCGCGCCGCGCTCTGTGAGGAGTCGGCAA
45 ACTTGCCCGCTTAGGCGCGAAATTAAGCACAAGGGCAGTTCCTTATGTCGGAACAGCCCT
TTTAGCCCATGACGTATACGAACTTTCAAAGAAGACATACAGGCACAAGGCTACCAATA
CGACCCCGAAACCGACAAATTTGTAAGAGGCTACGAATATAGTAATTGCCTTTGGTACGA
AGACAAAAGACGTATTAATAGAACCTATGGCTGCTACGGCGTTGACAGTTCGATTATGCG
CCTTATGTCGGATGACAGCAGATTCCCCGAAGTCAAAGAATTGATGGAAGCCAAATGTA
50 TAGGCTGGCACGTCCGTTTTGGAATTGGCATAAAGAAGAACTGAATAAATTAAGTTCCTT

GGATTGGAATAATTTTGTGTTTAAATCGTTGCACATTTAATTGGAATGGCGGAGATTGTTT
GGTCAATAAAGGTGATGATTTTCAGAAATGGGGCTGATTTTTCCCTTATTCGCAATTCAAA
ATACAAAGAAGAAATGGATGCCAAAAGCTGGAAGAGATTTTATCGTTGAAAGTCGATGC
CAATCCCCGACAAATACATAAAGGCAACCGGTTATCCCGGTTATTCGGAAGTAGAAGT
5 CGCACCCGGAACAAAGTGAATATGGGTCCCGTCACGGACAGGAACGGGAATCCCGTTCA
GGTTGTCGCAACATTCCGCAGGGATTTCGCAAGGCAACACCACGGTGGATGTTCAAGTAAT
CCCGCGTCCCGACTTGACCCCGGAAGCGCGGAAGCACCGAACGCACAGCCGCTGCCCGA
AGTATCGCCCGCGAAACCCCGCAACAACCCGAACCCCAATGAGAACCCCGGCACGAG
CCCCAATCCCGAACCCGACCCCGATTGAATCCCGATGCAATCCCGATACGGACGGACA
10 GCGCGGCACAAGACCCGATTCCCGCGCGTTCCGGGACGCACAAACGGCAGGGACGGCAA
AGACGGAAAGGACGGCAAGATGGCGGCCCTTTGTGCAAAATCTTCCCGACATTCTCGC
TTGCGACAGGCTGCCCGAGTCCAATCCGGCAGAAGATTTAAATCTGCCGTCTGAAACCGT
CAATGTAGAGTTTCAGAAATCAGGAATCTTCAAGATTCCGCACAGTGTCCCGCACCTGT
CACTTTCACAGTGAATGTGCTTGAATCAAGCAGGAGTTCGCGTTAGCTTTGAGAACGC
15 ATGTACCATAGCCGAACGGCTAAGGTACATGCTTCTCGCCCTTGCTTGGGCGGTTGCCGC
CTTTTTTTGTATCCGCACAGTATCTCGTGAAGTCTAGCAGGCGCAGCACCAGCGGGCTTC
AGTAATCTGTACCAAGGACGGGGAGGACGTCAGAAAGATTTGTAAGACGGCTTTATC
GTCTTTATAAATCTTTTGGATACCCCTTGCCGCCCCGCCAAAAGAACACATTCTGCCGC
AAGGGCAGGTGGTAAGGCGCGCGCTTTTGCGCCGTCCCATGCCCGCGGCGTTCGCAA
20 GTGAGACTAGGGGGTGTGGGGGACTAGTCCCCGCAAAGCGTTCAGCTTCGGAACCTTG
GCCGAAAGGCAGGCGAAGCAGCGCACTTTGCGACGAATGTCGCAATAGCCGAGAAGCGC
GGGGGGATTGGCGATAAGCGCGAGGGGGGTGTCCCCACAGCGCCGCGCGCGCAATGC
GGCGCAAAATCTTTCAGATTAAGAAACATTTGTTAATGAGGCAACCGTGCCTTTAAGA
AAGGGATAGCAATGAAATGTTGGCCGCTTGAATCCGCTTTTGTAGCGTGGCAGGC
25 CGTATATTGACATGATAGGCTTGTATGGCGGTAACTATTAGGGGTGGATAGATTGGTA
GCCCATTTCAGCAGGCGATAACCAATAGCATAACGGGCGCGCTCAAGCGATGTTGCAG
CTTTTTTATATAAGCGGCGGTGGAACCGTTCTTAATATCTGTTTGGCGGATCGCCTTT
ATTCTGTCTTCAAACAAATGACAAACTAGCAACCTCAATCGGGAAGAAAAATAAATG
GCAGAGATCTGTTTGATAACCGGCACGCGCGTTTCAGGGAAACATTAATAATGGTTTCC
30 ATGATGGCGAATGATGAAATGTTAAGCCTGATGAAACGGCATACGCCGTAAAGTATTT
ACGAACATAAAGGCTTGAAATACCGCACACCTACATAGAAACGGACGCAAAAAGCTG
CCGAATTCGACAGTAGCAGCTTTCGGCGCATGATATGTACGAATGGATAAAGAAGCCC
GAAATATCGGGTCTATTGTCTATTGTAGATGAAGCTCAAGACGTATGGCCGGCAGCTCG
GCAGGTTCAAAATCCCTGAAATGTCCAATGGCTGAATACGCACAGACATCAGGGCATT
35 GATATATTTGTTTGTACTCAAGGTCTTAAGCTTCTAGATCAAAATCTTAGAACGCTTGTA
CGGAAACATTACCACATCGCTTCAAACAAGATGGGTATGCGTACGCTTTTAGAATGGAA
ATATGCGCGGACGATCCCGTAAAAATGGCATCAAGCGCATTCTCCAGTATCTATACACTG
GATAAAAAAGTTTATGACTTGTACGAATCAGCGGAAGTTCATACCGTAAATAAGGTCAAG
CGGTCAAAGTGGTTTACACTCTGCCAGTAATAGTATTGCTGATTCCCGTGTGTTGTCGGC
40 CTGTCTATAAAATGTTGAGCAGTTACGGAAAAAACAGGAAGAACCAGCAGCACAAGAA
TCGGCGGCAACAGAACAGCAGGCACTTCCGGATAAAACAGAAGGCGAGCCGGTAAAT
AACGGCAACCTTACCGCAGATATGTTTGTTCGACATTGTCCGAAAACCCGAAAGCAAG
CCGATTTATAACGGTGTAAAGGAGGTAAAGAACCTTTGAATATATAGCAGGCTGTATAGAA
GGCGGAAGAACCAGGATGCGCCTGCTATTTCGCATCAAGGGACGGCATTGAAAGAAGTGACG
45 GAGTTGATGTGAAGGACTATGTAACAAACGGCTTGCCGTTTAAACCATACAAAGAAGAA
AGCCAAGGGCAGGAAGTTACGAAAGCGCGCAGCAACATTCCGACAGGGCGCAAGTTGCC
ACATTGGGCGGAAAACCGTAGCAGAACCTAATGTACGATAATTGGGAAGAACGCGGGAAA
CCGTTTGAAGGAATCGGCGGGGGCGTGGTCCGATCGGCAAACTGAAGAAAACGGCAAGAG
AGAAAAAAGACCCGTAAACCGTTTGAATATAGACGGTTTACGGGTCTTGTTCGCGCAA
50 AGCAAGGGCTTAAGGCAGTCAGGCAGCAATCCCGCAATGTATTAAACAGACGCGTAGAA
ATGCCGGCTGCCCTTATCCATCCTCGAAATGAATATCATCCTAGCCGTATCAAGGCTGT
ATAAATAAGGAAAATACCAATGAATATAATCGGGCTGGACATCTCAAAGGACACCATAGA
CGCAACATTGCATAAAACAAACGGAAGTATCCATTACATTAAATTTAAGAATAATGATGA
TGGATTAAACAGTTTAGATTGTGGATAAAGGGAACAGAATCAGAAAAGTCTATATCGG
55 CATGGAGGCAACAGGCATCTATTACGAAAAGGCAGCAGATATGCTTCTTCTACTATAC
TGTTTACGTTATTAATCCCTTAAATCAAGGACTACGGAAGGAGCAGGTTTAAACCGTAC
CAAAACCGACAAAGCAGATTCAAACCTGATAGCAGACTACATAAAAGGCATCAAGATAC

ATTGATACCGTATCAGATACCCAAAAACAAAGCACTGCAAAAACCTGATTAACCTTAAAAA
TCAATTACATCAACATCAGAAGCAAATTA AAAAACCGTCTTCATAGCACTGAAGAAGACTT
CATAAGGAACATACATCAAGACTTGATAGATACCATACAGGACAAGATGGAACAGGTAAA
AATAGCCATATCCGAACAAATCAAAAACAAACGGACAATAACCATTACCGCAATCTTCA
5 AACCATCCCGAGCATAGGCAAAGACACCGCATCAGTTCTTTATGCGCAACTGACAGAAAA
ACATTTTAAAAACCGCAAACAGTTTGTATCCTATGCCGGATTAAATCCCGCCATCATACA
ATCAGGGACAAGCGTAAGAGGTGCGGGCAGATTGAGCCGATACGGAAACAGACGATTAAA
AAGTACGCTGTATATGCCCGCCCTTTGTGCTTACCGTTTTAACGCATTTCCGAAATTAAT
AAATAATCTGAAAAAAGCGGTAAGCCAAAGATGGTAATCATCGTTGCCATCATGCGCAA
10 ACTGGCGAAGCTCGCCTATTACATTGTTAAAAACCGCCAGCCTTACGATGCGGAAAGACA
CCGATTGAATCAATAAAATTCAACAAAATTAAACGGTTACGCGAATATATTTGTGTAACC
GTGCATTTGCATATCGTAAATAAACGTAAATAAAAATAACAATATAAATCAGTATATTGC
AACTTTGTTTTTTATTTTGTGTTGACGGGCAACATATCATCTGCGCGGGAATGACGGGAT
TTTAGGTTTCTGATTTTGGTTTCTGTCTTGTGGGAATGACGAAAAGTGGTGGGAATGA
15 CGAAAAGTGGTGGGAATGACGTTTTCAGTTGCTGCGGTTATTGTGAGGTTTTCGGTTATGTT
GGAATTTCCGGGAACTTATGAATCGTCATTCGCCGCGAGGCGGGAATCTAGAATTTCAAT
GCCTCAAGAAATTTATCGGAAAAAACCAAAACCCCTTCCGCCGTCATTCCCACGAAAGTGGG
AATCTAGAAATGAAAAGCAGCAGGAATTTATCGGAAATGACCGAACTGAACGGACTGGA
TTCCCGCTTTCGTGGGAATGACGGGATGTAGGTTTCGTGGGAATGACGAAAAGTTGCGGGA
20 ATGACGGAAAGTGGCGGGAATGACGGAAGTGGCGGGAATGACGGAAGTGGCGGGAATG
ACGGTTTCGGGCATTCTTAAATTACCCGTGTATCGCTGTAAATCTTAGAGATGGCGGAAT
ATAGTGGATTAAACAAAACAGTACGGCAAGGCGAGGCAACGCCGTAAGTGGTTTTGTGTA
ATCCACTATAATTGAAGGGGTTATCGGCTTGTGCAACGGAAGCCCAAGTTGTGCAAGACA
TATTTGGATTGCAGGCTGGTACGGATGCCGTAGCGGAGGAAGGCGGCATAGTTGGACGAG
25 TCGCTCGACCCGATAGACGCGCCCTGCAAAACATTTGCGCGTTGGCATTGCCGGAAGAA
AGCAGGCTGCTGTTGAAATCTTCCGTCCATTCCCAAATCAGCCCGTGCATATCATAAACG
CCCCAGTAGTTCCGGCGGCCTTTGCCGACATCGTGCAGGCCTTCCGTCCGCCGTCGGCA
TACCAATCGAGAATAGTGCGGTTGTAGCCGGGTTTCGTTTGAGCCGTTTCTGCGTGGCG
GAAGCAAGTCCGGCAAATTCCCATTCGTCAATGGTGGCAGGCGTTTGCCTTGTGCGGCG
30 CAATAGGCGTTGGCGGCAAAACAGGAAACATTGGTTACCGGTTGTTTTAATTCGCCCGCC
TTCCGGCGCATAGCTGCGGCTGCCGTTTTTTCATCCATGCTTCAGGTAAGCGGGTCTGCC
TGTTTGGAAACCGATCTGCTTTTTTGCATTGGGGGTGGCTGTTGACAAATTCGGCAAAC
TCGGCATTGGTAACGGGATATTTATCCAGTTTGAACGGTTTGAATTAATCAGGCCGGTA
TCTTTTTTTCAGATAAAGCGGGCGGTAGCTGCCGCTTCGATTTGAACCATTCGGCAGCC
35 GCCGCTTGAGTGCCGGCGAGTGCCGCGCCGAGGAAAAATAACCGGACATACTTCATAAAG
CCTCCTGACAGGCGGTTAAAATCAATCTTCCGAAAGGAAAGATTGGTTGTTAAAAACCA
CCGCCGTGCGTAATGAAGTACAGCGGCAGTGGTTTCGTCGCCGTAATGACGGGTATCCAAT
TTAATAAACGCTTTTTTCGGATGCAGAGGCTGCCGGGCGAGAAGCTGCCGGAGCGGAAGC
AGCAGGAGCTGCACCGTTACCGCGTAAGCGGTATCACTCAATTTTTGAGTCATGATTTT
40 AGGGTTTTCTGCACCTTCTACTTTCAATTGACCCAGTGCGCCTTTGTTGAATGCGCGGAA
GATAGAGTGGTCAACCAAAGTGTAGCTGCCCGGGATGTCGACTTTGAATTCGACGATGGC
AGAGCCCGCGGCAAGAACGATGGTGTGTTGTACGTTTTTCGTTAATCAGTTTGGCGCCTTC
AACATAAACTTTGTGGAAGATTTCCGCGATGACGTGGAAGGAAGATACCAAGTTCCGACC
GCCGTTACCAACGTACATACGTACAGTTTCCGCTGCTTTGGCTTTTTCAGCGCTTATCGCC
45 GCGGATAGCACCTACGTGACCGTTGAATACGACGTATTCAGGCTGTTCCGGCAACGCTTT
GTCCATATCGAACGGTTGCAGACCTTGCAGCGCTTTTTTGCCTTTGGTGTAGAAGTCGCC
TTGGACGATGTAGAATCTTTATCCACTTTCGGCAGGCCTTCTTTAGGCTCGACCAAAAT
CAGACCGTACATACCGTTGGCGATGTGCATACCGACCGGTGCGACGGCGCAGTGGTAGAT
GTACAGACCCGGTTGCAGGGCTTTGAAGCTGAATGTGGAAGTACGGCCCGGAGCGGTAAA
50 GGTTCCGGCCGCGCCGCCCTGGCCGGTAGCCGCGTGGAGTTCGACGTTGTGCGGAAC
GGTAGAAGAAGGATTGTTGGAAAATTCCACTTCAACCGTATCGCCTTCGCGTACGCGGAT
CATACGGCCCGGAACGTCGCCGTCAAATGTCCAGTAGCGGTATTCACACCGCTCTTCAT
GGTCATGGTTTTTTCGACGGTTTCATTTTACGCGGACTTTGGCGGGGTAGTCGCGGTC
GATTGCAGGAGGCACTTCGGGAGCGTGGGTGTAACCGCATCGATAACGGGCAGTTCCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 84>:

gmm_84

```
5  GTCGACTCTAGAGGATCCCCTGCGGATTTATTACGATATTACCGTATTACGGCCGCACCG
   ATGCCGCCTGCCCCCGAAAACTTTGGAGAATCCAAAAATGTTTCATTTTGCAATTTCC
   GGCACAACTGCCCTGCGCCAAGCGATAACCGATGCCTACCGCCGTAATGAAATCGAAGC
   CGTACAGGATATGTTGCAACGTGCACAGATGAGCGACGAAGAGCCCAACGCCGCCTCCGA
   GCTTGCCCGCCGTTTGGTTACCCAAGTCCGCGCCGGCCGACCAAGCCGGCGCGTGGA
   TGCGCTGATGCACGAGTTTCTACTCTCCAGCGAAGAAGGCATCGCGCTGATGTGTCTGGC
10  AGAAGCCCTGCTGCGTATCCCGACAACGCCACGCGCGACCGCCTGATTGCCGACAAGAT
   TTCAGACGGCAACTGGAAAAGCCATTTGAACACAGCCCTTCCCTCTTCGTCAATGCTGC
   CGCCTGGGGCCTGCTGATTACCGGCAAACTGACCGCCACAAACGACAAACAAATGAGTTC
   CGCACTCAGCCGCTGATCAGCAAAGGCGGCGCACCGCTCATCCGCCAAGGCGTAAATTA
   CGCCATGCGGCTTCTGGGCAACAGTTTCGTAACCGGACAGACCATTGAAGAAGCCCTGCA
15  AAACGGCAAGAACGCGAAAAATGGGCTACCGCTTCTCCTTCGATATGTTGGGCGAAGC
   CGCCTACACCAAGCCGATGCCGACCGCTACTACCGCGACTATGTCGAAGCCATCCACGC
   CATCGGCAAGATGCGGCAGGACAAGGCGTTTACGAAGGTAACGGTATTTCCGTCAAAC
   TTCGCGCATCCATCCGCGCTACTCGCGCACCCAACACGCGCGCTGATGGGCGAAGTGT
   GCGCGCCTGAAAGAGCTGTTCTTTTGGGTAAAAAATACGATATCGGTATCAACATCGA
20  TGCCGAAGAAGCCAACCGTCTGGAGCTGTCTTTGGATTTGATGGAGGCTTTGGTTTCAGA
   CCCTGACTTGGCTGGCTACAAAGGTATCGGTTTCGTTGTCCAAGCCTACCAAAAACGTTG
   TCCGTTTCGTTATCGACTACCTGATCGACCTTGCCCGCCGCAACAACCAAAAATAATGAT
   CCGCCTCGTCAAAGGCGCGTATTGGGACAGCGAAATCAAATGGGCGCAAGTGGACGGCTT
   GAACGGCTATCCGACCTACACCGCAAAGTCCACACCGACATCTCCTACCTCGCCTGCGC
25  GCGCAAACTGCTTCCGCGCAAGACGCGGTATTCCCGCAATTTGCCACCCACAACGCCTA
   CACTTTGGGCGCAATCTACCAAATGGGTAAAGGCAAAGATTTTGAACACCAATGCCTGCA
   CGGTATGGGCGAAACCTGTACGACCAAGTCGTGCGCCCGCAAACTTAGGCCGCCGCGT
   GCGCGTGACGCCCGAGTCGGCACACAGAAACCTGCTCGCCTACTTGGTGCGCCGCT
   GTTGGAAAACGGCGCGAATCGTCTTTCGTCAACCAAATCGTCGATGAAAACATCAGCAT
30  CGACACGCTCATCCGACGCCCGTTTCGACACCATCGCCGAACAAGGCATCCACCTGCACAA
   CGCCCTGCCGCTGCCGCGGATTTGTACGGCAAATGCCGTCTGAATCGCAAGGCGTGGA
   CTTGAGCAACGAAAACGTATTGACGACGCTTCAAGAACAGATGAACAAAGCCGCCGCGCA
   AGACTTCCACGCCGCATCCATCGTCAACGGCAAAGCCCGCGATGTCGGCGAAGCGCAACC
   GATTAAAAACCTGCCGACCACGACGACATCGTCGGCACAGTCAGCTTTGCCGATGCCGC
35  GCTTGCCCAAGAAGCGGTTGGCGCAGCCGTTGCCGCGTTCCCCGAATGGAGTGCGACACC
   TGCCGCCGAACGCGCCGCTGCCTGCGCGTTTTGCCGATTTGCTGGAGCAGCACACCCC
   AGCACTGATGATGCTTGCCGTGCGCGAAGCAGGCAAACGCTGAACAACGCCATTGCCGA
   AGTGCGCGAAGCCGTGATTTCTGCCGCTACTACGCAAACGAAGCCGAACATACCTGCC
   TCAAGACGCAAAAGCCGTGCGCGCGATTGTCGCCATCAGCCCGTGGAATTTCCCGCTCGC
40  CATCTTTACCGCGAAGTCGTTTCCGCATTGGCGGCAGGCAACACCGTCATCGCCAAACC
   CGCCGAACAAACCAGCCTGATTGCCGGTTATGCCGTTTCCCTCATGCACGAAGCCGGCAT
   CCCGACTTCCGCCCTGCAACTCGTCTCGGCGCAGGCGACGTGGGTGCGGCATTGACCAA
   CGATGCCCGCATCGGCGGCGTGATTTTACCGGCTCGACCGAAGTGGCGCGCCTGATCAA
   CAAAGCCCTTGCCAAACGCGGCGACAATCCCCTCCTGATTGCCGAACCGGCGGACAAAA
45  CGCCATGATTGTCGATTCCACCGCACTTGCCGAGCAAGTCTGCGCGACGTATTGAACTC
   CGCCTTCGACAGCGCGGACAACGCTGCTCCGCCCTGCGCATTTTGTGCGTCCAAGAAGA
   CGTTCCGACCGTATGCTCGACATGATCAAAGGCGCTATGGACGAACCTCGTCGCGCAA
   ACCGATTGAGCTCACTACCGATGTCGGCCCCGTATCGATGCCGAAGCACAGCAAAACCT
   GTTGAACCACATCAACAAAATGAAAGGTGTTGCCAAGTCTACCACGAAGTCAAAACCGC
50  CGCCGATGTCGATTCCAAAAATCCACGTTTCGTTGCCCCATCCTGTTTGAATTGAACAA
   CCTCAACGAAGTGAACGCGAAGTCTTCGGTCCCGTCTGCACGTGTCGCTACCGCGC
   CGACGAAGTCAACAGCTCATCGACCAATCAACAGCAAAGGCTACGCCCTGACCCACGG
   CGTACACAGCCGCATCGAAGGCAGGTACGCCACATCCGACCGCATCGAAGCCGCGCAA
   CGTTTACGTCAACCGCAACATCGTCGCGCGAGTCGTGCGCGTACAGCCCTTGGCGGACA
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-615-

CGGTCTGTCCGGCACAGGCCCAAGCAGGCGGTTCGTTCTACCTGCAAAAAGTACCCG
CGCCGGCGAATGGGTTGCCCGACCCTGAGCCAAATCGGACAGGCGGACGAAGCCGCACT
CAAACGCCTCGAAGCACTGGTTCACAACTACCGTTCAACGCCGAAGAGAAAAAGCCGC
AGCGGCCGCTTTGGGACACGCCCGCATCCGACCCTGCGCCGTGCCGAAACCGTCCTTAC
5 CGGACCAGCCGGCGAGCGCAACAGCATCTCATGGCACGCGCCAAACGCGTTTGGATACA
CGGCGGCAGCAGGTTCAAGCCTTTGCCGCACTGACCGAAGTTGCCGCCCTCCGGCATACA
GGCAGTGGTTCGAACCCGACAGCCCCCTGGCTTCTTACACTGCCGACTTGGGAAGGTCTGCT
GCTGGTCAACGGCAAACCCGAAACCGCCGGCATCAGCCACGTTGCCGCCCTGTGCGCTTT
10 GGACAGCGCGCGCAACAGGAAGTTGCCGCCACGACGCGCACTCATCCGCATCCTCCC
TTCGGAAAACGGACTCGACATCCTGCAAGTGTGTTGAAGAAATCTCTTGACGCGTCAACAC
CACAGCCGCGCGCGCAACGCCAGCCTGATGGCGGTGCGCGACTGATTTTGCCGAAATAC
CCGGGCGCGGCCCGTGAACCAATGCCGTCTGAAAACCTTTCAGACGGCATTTTTATAATG
GATTAACAAAATCAGGACAAGGCGACGAAGCCGACAGTACAGATAGTACGGAACCG
ATTCACTTGGTGTCTCAGCACCTTAGAGAATCGTTCTCTTTGAGCTAAGGCGAGGCAACG
15 CCGTACTGGTTTTTGTTCATCCACTATAACAGCAACCCGTGTCGCCGTATTCCCGCAAAA
GCGGGAATCCAGTCCGTTTCAGTTTCGGTCATTTCGATAAATTCCTGTTGCTTTTCATTT
CTAGATTCACCTTTCTGGGAATGACGCGGAAGGTTTTGTTTTTCCGATAAATCTT
TGAGGCATTGAAATTCAGATTCCCGCCTGCGCGGGAATGACGATTATAAGTTTCCCGA
AATCCAACATAACCG

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 85>:

gnm_85

TTTGGCGATCAACCCGCCGCTAGCCGGTCAGTTTGGCGTCGCTGCCGATGACGCGGTG
GCAGGGAATCAGGATAGATACTTTGTTCTGCCGTTGGCGGCGGCAACGGCGCGGACGGC
25 TTTGGGGTTGCCCAAACGCTGCGCCTGCTCCTTGAGCTGCGCGTTTCGCCGTAAGGAAT
CGCCAAGAGCGCGTCCCATGCCGTCTTTGAACTCGGTGCCAATCTGCTCCAAAGCGGT
GGCAAAGGTTTTAGACGACCTTGAAGTATAAGTCCAATTCCTGCCGCAAAAGTTGCGT
CCGCTCATCTCCCGAACAACACCGTCCGCGCAAGGCTTTTTGGACGGCGGCAATTC
CTGTTCCAAATGCTTCTGTCCGACAAATCCAGCAACACAAACCCCTGCTACCGAACAC
30 CGCCAGCATCTGCCCAAAGGCGTGGCAATGGCGGCACACACCAGCTCGTTCAAACCTGTC
GGGATAACGCGCTTCCAACAGACGGATGGCGCGCGGATGCGGACATATTCTTCAGGCGC
GCAGCCGATATTGTCCCAAAATCCCGCTCGAAGTGTGTTGGCTTCGCATTCCGTGAGATT
GGGATGCGGCATAACGCCGCACTCAAAAACCCGAGATTGAGCCAAATGGCGGATTTTCATC
CCATTTTGACGGCAGATTGTTAAGGAAGGCAGGTAATCATTTGTTGCTCCGTATCCC
35 TATCATAGATTTGACGGCAAAATCCCAATTTTGGCATTCCCGCACGCGGAGCAGGAA
CGGGCTATGACGTAAATCTTGAGGGTTAGGTTGCGGCAATACCTAAATATTGATATTT
TAAAGCATCAGAGAAAGGAATGTTCAACACACAGGACGACACATAAAGCGCCGCCCAT
GAAAAATTTAGACGACCTGCAAAGGTCGTCTGAAACCAGATTTTGCATTGCGCAT
TCTGGCACATCATCAACCGTTTCGGCACATTCCTGCCGCCGTTGACAGCCTATAATGAA
40 TCCACTTATTCATCAAGCAAAGGAATCATCTATGCAAACCTCATCCTCTCGCCGTACT
GCTGGCTTTTTCAACCGCTGCCTTTGCCGGGGCGCATTACGCTGCAATTCGACAACCC
GTCCGAAGACGCGGCTTCACGCAAAACAGCTTTGAGCGCGCCTTACGGCTTTTGCTG
TTCAGGCGACAATGCTTCGCCCCGCTGTGCTGGAAAAATCCGCCCGCGGGACAAAAGT
TTCGTCCTGACCGTTTACGATAAAGACGCGCCGACCGGACTGGGCTGGATGCACCGGGTG
45 GTCGCCGACATTCCCGCGATGTCCACCGCGCAACGCGACCTCGCTGCAATTAAGCCGC
TGCGCCAACATCGCCGACCGGACTGGGCTGGATGCACTGGGTGGTCCCGACATTCCCGC
CGATGTCCGCCCGCAACGCGGCTCGCTGCAATTAAGCCGCTGCGCCAACATCGCCGA
CGACCAGTCCGCAGCCATATCGGCGTAATCAGTTTGCGGATTTGCCGCATCAGGTTGAC
GCCTTCGTACACGGCAAAACCGATGCCGTATGCTGCAACCACGCCAACGCGCAAG
50 CGCGGCCTCCGCAGCATTGTGCGGCACTTCTTCATCCGCCAGTACCGCAGCCTCATAATC
AAACGCCGCGCCCATACGCCGGAATACGGCAGCTTACCGCATCGCACACTGCCTGCGC
CGTCCCGTATTGTGCGGCGAACCTTCTACGGTTCTGTTGAAAGCAATCCATTGCGC
CTGATAGAGCCGCTGTAATCGGAATATTGATGACGTCAAACGCTCTGTCGCCCTGCCAA

GGCGACCGCCTTACCCGCCGAGCTTCTTACTTCCGCGCCGCACGATAAGCACAGCCGGT
TCATATACCGCCACGCTGCGGTACAAGGCGGTATGATGTTGCACGATGCCCGCTAAAGCA
CCCAATCGTTGCGCGGTATGAAAGTATAGTGGATTAAATTTAAATCAGGACAAGGCGACG
5 AAGCCGAGACAGTACAAATCGTACGGCAAGGCAAGGCAACGCCGTACTGGTTTAAATTT
AATCCACTATATCTCAAACCCACGTTAGGTCTAAGCAAATGGTCGGACATCCTTATCCGA
ACGCCATCTTCTTTTCAGACGGCATTGCAAATTTAAGTTTGACGTGCGTTCAAATAAG
GCAGTTAATGCGAAGCGAAATTCGTCGGCGTACCTGCAACTTGGCCCCCTCCCCTATAGG
GGAGGGTCGGAGGGAGGGTAAAACGGGGCAGATACAGACAATATTTCCGTTGCCGCCCCG
10 ATGCCCTCTCCCTAACCTCTCCCACGGGAGAGGGAATGGATTGCCGTTGAAATAAATCG
CTCTACATAAAAAATCAATGTGTTATCTCAAACCCACATTAGGTCTAATCAAATGGTCGG
ATATCCATATTCGGCAAGCAAGCTGCTTTTCAGACGGCATTTCAGCCAACAAGCGCGCCA
ATATCCCCTCATACACCGCAGACAGCTTCGGAATGTCGTTAGCCGCACGTTTTCGTTGA
TTTGGTGGATGCTCGCATTGGACGGGCTAATTGATAAGTTCTTGCGCAATGGCTTTGA
TGAAGCGTCCGTCGGAAGTCCCGCGGTGGTGGACAATTCCGGCTCAATGCCGAGGTTT
15 CGGCAATGGCTGCGCGTGCCACGTGCGTCAGTTTGCCCGCTTGGGTGAGAAAGGCTGCC
CCGAACACGACCACTGCAAATCGTATTGCACGCCGTGTTGTCCAAATGGCGTGACGC
GTTGTTTCAGCCCTGCTTCGGTGGACTCGGTGGAGAAGCGGAAATGAATTTGACGTTCA
GCTCGCCCGGAATGACGTTGGTTCGCGCCTGTGCCCGCTTGATATTGGAATTTGAAAGC
TGTTTGGCGGGAATATTCGTTGCCTTCATCCAGACTTCCTGCGTCAGCTTAACAAGG
20 CCGGGGCAAAAGTATGCACGGGATTGATTGCCAATGCGGATAGGCAATATGGCCTTGCT
TGCCTTTGACGGTCAGGTTGCCGACAGCGAGCCGCGGACCGTTTTTAATCATATCGC
CCAATTTGTCCACGGCGGTGCGTTTCGCCGACGATGCAGTAGTCGATAAGCTCGTCGCGG
CTTTCAATACATCGACGACTTTGGTCGTGCCGTCCAACGCGTCGCCCTCTTCGTGCGAAG
TAATCAGAAGCGCAATGCTGCTTGGTGGTTGGGATGTTTGGCAACGAAGCGTTTCGAGG
25 CGGTAACGAAACAGGCAATGCTGGTTTTCATGTCTGCCGCGCGCGCCCGTATAATCTTC
CGTCGCGCTCGGCCGTTTCGAACGGGGGGAATCCATTTTCGACAGGACCTGTGCGTA
CAACGTCGGTATGCCCTGCAAAACAGACGACGGGAGCTTCGTGCCGCGTCGCAACCAGA
TGTTTTTGGTGTCCGCGAATGGAGTTCTTCAGCCGCAAAACCGATTTTGTGCAGGCGTT
CGGCAAGGAGTTTTTGGCAATCCCTGTCTGTCAGGGGTAACGGATGGTCGGGAAATCAGCT
30 CTTTGGCAAGCTCTAGGGATTGAGTTTCGGTCATATTTGTTCACTTTTGAAATTAGACCG
TCTGAAACGTTCTGAATGTGATTTTCAGACGGCATTAGGTTAGGTTGGCATACGGGGTG
GGTATTTTACCCATCAGTCTTCTGAATCATTGCGGTGGCAGGCTTCGTAAGCGGCAGC
AAATCTTCCACCGTTTCCGCTATCCATTTCCGCGACATCCTGCCTGCCAAATCGTCGCGT
TCGATGTGTTTCCGATGCAGAAAAGTCTTCGTGCTTTTGCAACTTTTCGGTCGGACTCG
35 TTTTGTTCGCGGACGGTGTGCTGCTGCTATTTCGCTTTCCGACCGGTGCCACATATCG
AAAGAAGCGTATTTTTCGGTATCAAATATCCAACAGCGGTTGTAATCAGGCAGCGCG
ATGGGGGAAACATCGGCTTTATAGCAGTGCCAATCCAAGCTGACGCTCAGACGGCGCGG
TTGAGCAGTATCGACAAAATCGCTGCGGAATTTTATATTGTTGCTATTGTAAGTAGGCA
AAGAAATGGGCGCAACCTGCCAGCGTTACACCAGCGTTTCGATGTGCGGCGGCGCAAAC
40 GGGCACCCAATTCCGGCGGCAACCTGCTGAATCAGCTGCTGCCATATCTGCCAGTTTCT
TTATAGTCAGCCTTGATTTGCGGAATGCTTTCAGGCTGGTATTTTTTAAGCTGGGAAAT
TGGAAAAACGGGATATTGAACAAATCGCAACTTTTCGGGGTCAGCATAATATATCCTTGA
GACGATTGTTTCAGACGGCATTATTTGCCGCGCGCGCGCCATAATTTGCCGATTTCG
GTCAGTTTTTCTTTTGGGATAAAGGTGTTGCCCATATCAAACAGCGGCTCTTCAATCGCC
45 AAATGAACATCATATCCCGCCACAAAACGTTTGAACGCTTCTCATCGGGACATAAGCG
TTGTCTGCTTCGAGTTTGGCAAATTCGGCGGAAACAGCCGCCAGTTGTGCTGCAGCCCC
ATATGTTGGCGCAAAGCTCGTCCACGCTTTCTGGGCTTGGGCGCATATTGCAGCAGC
AGCGGGAAGAAGTTTCTTCTTCGTCTTCATGGTGCAGCGGCGGGCAACGTTGAAATAC
TGGGCGATTTCGGCGGATGGTTTGAACAAATCTGATTGCAGCGGTTTTTCGGCGATATAG
50 TCCGACAGCATGGCGACTTGTCCGCAAAACGGCGCACTTTGCCGTGGCAGGCATACAGC
ATTTCAATCGGTTCCGGCAAAGGTAACGCTTTTGGTTTCAAACGGATTTCATGTTTTCGTTC
TCAACGGGCACTTTTCAAGCAGTCATTTTATAATAAACAGCCTGCACAAAGCAGGCTGT
CCGTCTTTTGAGACTTTAAGCGGATTAATCGACCAAAGTCACTTTGCCGTTTCATCAAAGC
ACCGTGACCTGGGAAGGTACAAGCGAATTTATATTCGCCGTCGGCCAATTTAGCAGGATC
55 CAGAGTCAGGGAAGCTTCTTCGCCGCGCGCGATCAGTTTGGTATGGGCAACAACGCGTGC
ATCATCAGGTTTGACATAGTCGGTATCGGCAGCACCTACGCCGCTTTTAAATACGCCGTC
CATGTCTCAGCTTTGGCAATCACGAGATTGTGACCCATGCTGGCTTTGGGTTGCGTACC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 86>:

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 87>:

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AGAATTTCTGCTGTCGGCTTGGGCGAATCTCAAGCGCAAATGACTCAAGTTTGTGAAGCC
GAAGTTGCCAACTGGGTGCGAAAGTCTCTAAAGCCAAAAACGTGAGGCTCTGATTGCA
TGTATCGAACCTGACCGCCGTGTGGATGTGAAAATCCGCAGCATCGTAACCCGTCAGGTT
GT

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 88>:

gmm_88

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GCCGATTTGGACGCGCTCGAGCATAATGTTGCCCAATTTTGGCGAATATCAGGAAGCT
GCCACATC_sTTTCTGCCATGCGCCATCAGGCGGCAGAGCGTTTGAGCGGGCAAACGACC
GAGCATATGCACACCTTGCCATGAAAGGCGCGCGTTTCGACATCGTCTGTGCCTTCG
TCGCGGACGGCACACGTTTGGAGCAGGTTCAATTTCAAGTTGCCGCAACAAAGGCAAT
CCGCCCCGTCTGCTGAATAAAGTTGCCTCCGGCGGCGAATTGGCGCGTATCAGCCTTGCC
TTACAGGTTGTTGCCAGCCAATATACCCAAGTTCCCACTGATTTTGTATGAGGTCGAT
ACCGGTATTGGAGGGGGAGTGGCTGAAATGGTGGCAAGGCATTACGTGCGTTGGGCAGA
AAACATCAGGTGCTTGCCGTTACCCACCTTCCCCAAGTCGCATCCTGCGGAGAAAACCAC
TGGCGGGTGCGAAGCACAGCGAGGGAGAGCAACCGTCAGCGAAATCAGTATATTGGAT
GAAATCCAACGGATCGAAGAGGTTGCCCGTATGTTGGGCGGAGAAGTCATTACCGATACG
ACGCGGCAACATGCGGCAGAATTGCTGCAACTTGCCTCGAAAAATAGTTTATTTTAAAT
CAATCAGTTAAAAATAACTAAAAATAAAGTCTAAAACAATAGACAGAACTCAGATAAA
TCCGTATTATCAGCTTTCTTAATCACTTGAACAAGTGATTGTGCTGCACCCGTAGCTCA
GTTGGATAGAGTATCTGGCTACGAACCAGAGGGTCGGGCGTTCGAATCGCTCCGGGTGCG
CCAGTAAGAAAATACAATATGCGCCCATCGTCTAGCGGTTAGGACATCGCCCTTTCACGG
CGGTAACCGGGGTTGATTCCCCGTGGGCGTGCCAAATCAAAATGCCTCCGATTATATCG
GAGGCATTTCTCATTTCTCATTTCTCATTTCTCATACTGAGACCTTTGCAATAACATAGG
TTACTAAAATTTTATGCTCAATCTCATTTTCAAAATGCAAACTTTTCTGATTTTTCCTA
CTTTTGTCTCAATATTAGGAAGGTTTAGGCAATTGAAAATTTTTTGGCGCATTTTATG
CGTCAAATTTTCGTTAACAGACTATTTTGAAGGTCGCGATTAAACAAAATCAGGACA
AGGCGATGAAGCCGAGACAGTACAAATAGTACGGAACCGATTCACTTGGTGCTTCAGCA
CCTTAGAGAATCGTTCTCTTGGAGTAAGGCGAGGCAACGCCGTACTGGTTTTTGTAAAT
CCACTATATTGAGTCTCGAGAAGGAAATAAAATTAACATCCTTATATATTGAGTTCC
TGAGAAGGGAAGATTAAACAAAATTAACGCCCTTTACTTCATACAATCAACAGGGCTTTT
TCATTCTTCTTATCTAACAGGGGTACAGAAACCGAAACGGCTGGCAGGGTTAAGGAA
GTCTTCGAATGTTACGGAACATTCTCTTGGACAGCAAAGGCAATTTGTTAGGCATTCTT
TACTCCTTATTTTGGGAAGAAAACGTTATGGGTGTTTTGATATTTTACCGTCAGGATTG
GTATGTTTATTTGATATGATTTTCTGTGGTTCGGGACGGCATGCGGCAAGACTTAAGGG
GTTAGATCCTTCTTCTGACGATGGCGCGGATGATGGTGCGGTTGGGGTGTAGGGCGTGG
CGCAGGCGTGTGAAAAGGGATGGGGCAAGCCTAGGATTTGGGCTGCAATGGCGGCGGGC
CAGATGGGGGCGGTGGCGAGTCCGCGGGTGCCGTGCGCGGTGTTGACGTAGGCATTAGGC
AGGTATGGGCATGGGGTGTCGATGCGGTAGTTTTGTCCAGCGCGAGTTTGGTGATAGGTC
TGCCGCATGGCGGCAATGTCGCCGAGTGCGCCGACTAGGGGAAGGTGGTCGGGGCTGTCTG
CAGCGTATGGCGGCTGCCCTTGGTGTTTTTGGGGGTTTGGGTGGCGGCAACAATGAT
TCGGAAAGGGCGGGGTTAAGGTGTGCCAATGCTTGGCGGTTTGGGCTTCTCGGCTTCG
TTCCATCCGGTATGGCTGCTGTTGGGAATAAACTCGCGCCGTAGCAGTGCAGTCCGTGC
CACGACGGGCTGATGTAGCTTTCGCCTGAAACGGCGCAACGCAGTTGTTCCGAAAACGGG
GTGGACGGTGTGAGGCCGGTTTGTCCCGTATTTGCCCTGAGAGGCAGGGCGGCGAGGTTG
GTTTCGGGTAGGTAGGGGCTGTTCCGACCGGTGCAGTAGATGATGTGTGTGGCGGTAAAT
GTGCCGTTTGGCGTGCTTGCAATCCACTTTTCCCGTCGTGGGAAATGTCGGTCAAGGGT
TTGAGCCATACGCCGTGTTGCCAGTAGAGTCCGCATGAAGGGTGGTGTATGGGACGGAC
AGTGGGATACGGCGGATTTTTTTCGGCTTCTGCAGATGTGATGCTGCGGTAGAGGTGGTTA
TGGTGTTTTTGAACCCCAATTCGTGATTGCGTTGTTGTTGCGGTGCGGCTGTAATTGAGG
TGGATGATGCCGTTGCCGCCCCAGGTTTCGGATTCCGGGACAGGATGTGTCCGAGCAGCGT
TTGGTGTAGCCGTAGCCGCAAGCAAAAGTTCGGTCTGTTCCGGTGTCTGCGGCGAGATT

TTGGCGTAGAGCAGCCCTTGGCGGTTGCCGCTGGCGGCTTGGCGGCTTTTCGGGCTTCC
 AATACGGTAACGGAATGCCGTGTGATGCTAAGGCGTGGCGGTTGCCGCGCCGATATG
 CCCGCGCCGATAACGAGGATGTGTTCCGGTTTTTGGCGTTCGGATGTTTGTGGAAGTGCA
 AACCAGGGTTTGTGCGGCTTGCTTTCCGTTTGGCGGATGGCTTCGGTCTGCCAGGAAATG
 5 TGGTGGAAATGTTTCGTGCAGGTGGTGGGTGCGTGAAGGGGAACCAAGCCAGAAGCGGACA
 TCGGGCAGGATGTGTTTCGATGAGGTTGATGCTGTGCAACTGGAGGCACTGCATTGCCTGA
 TCCAAACGGTGCTTCAGACGGCATTCCGCGTCCGAAGCATCTTGTGCGGTTTGAATAATCG
 GGAATCTGATTATCGGGGAGGCAGATAATCAGGTTGAGCGGGGGTGGTGTGCGGATG
 GCTTGGTCGAGTGTGCGGATGTGCGGAATGCCGTCCCATACGAGATTGTCCATATCAATG
 10 CCGTTTTAAAGTGTGGGTTTGAATATCGGTATCGGGATAAAGCTGTAAAATACGCGCCGT
 TTGAAGGCACGCCGTGCGCTGCCGATATTGTATGCCGAACCGAGGTGTTTTTGAATAA
 TATTCCTGTTGAAATCCGTTTGTGAAAAACCGTACCGTGTGGTTTGAATTATGGGGA
 CGAACCTAAAAATCTGCTGCCGAATTTTACGCGTCTATTCCGCCAGTGCGGAAGTGCG
 CGGACACGGCGTGGGACAGGATGTTTGCAGACCGGCAAGGCGGATGTCCAAATCGCGGA
 15 TTTGCAGCCTGTGCGACAGTACGCGCTGAAAATCAGTTTTTCAGACGGGCACGACAGCGG
 TCTTTACGATTGGGCGTATCTGCACAGACTGGCATACGGATACGATGCGATGTGGCAGGA
 ATATTTGGACAAATTGGCGGCGCGGGCGCGTTCGCGTTTTGAAGAGAAATAAGACCGGTC
 GGATGGTAATCTGACGGGCAAGGTATCAGAGAGGTGGTTAGAATATGGGCGGACAGAAA
 ACGCATTTTCGGATTACGTACGGTCAACGAAGATGAAAAAGCCGGCAAAGTGGCGGAAGTG
 20 TTCCACTCCGTGCGCAAAACTACGACATTATGAACGATGTGATGTGCGGAGGGCTGCAC
 AGGGTGTGGAAGCATTTCACCATCAACACGGCGCACCTGAAAAAGGCGATAAAGTGTG
 GACATTGCGGGCGGTACGGGCGATTGTGCGCGGTTGGGCGAAACGGGTGCGCAAGGAA
 GCGGAGGTTTGGCTGACCGATATTAATTCCTCTATGCTGACCGTTCGGGCGGACCGTCTG
 TTGAACGAAGGCATGATTTTGGCCGTATCGCTTGCCGATGCGGAAAACTGCCTTTCCCC
 25 GACAATTATTTCAACTTGGTTTCCGTGGCGTTCCGCTTGGCGAACATGACGCATAAAGAT
 GCCGCGCTGAAAGAGATGTACCGTGTGTTGAAACCGGGCGGCACGTTGCTGGTGTGGAG
 TTTTCCAAATCTACAAACCTTTGGAAGGCGGTATGATTCTATTTCGTTCAAGCTGCTG
 CCGGTATGGGCAGGCTGATTGCGAAAGATGCGGAGAGTTACAGTATCTTGCCGAATCC
 ATCCGTATGCACCCCGATCAGGAACTTTGAAACAGATGATGCTGGATGCGGGCTTCGAC
 30 AGCGTGGATTATCACAATATGAGTGGGGCATCGTCGCGCTGCATAAGGGCGTGAAATTT
 TAAACGGACTGGCTGTGCAGCCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 89>:

gnm_89

35 GTAGAATTGCTAAGGAATCCTCACGATGCTTCTAACACTTTCTTTGCGTGATTTGTGTCAT
 TGTGAAAAATCTGAATCTGGATTTTCAAAGCGGCTTTACCGTATTGACCGGAGAACTGG
 CGCGGGCAAGTCCATTACTTTGGATGCGATTGGTCTGCTGTTGGGCGATAAAGCCGATTA
 CAGCCAAGTCCGACGCGGCGCAAAGAAGCGCAGTTGTGCGCGTTGTTTGATATTTCCCA
 TTTACCTGTTTTTAAAGCAGAATTGTATGAACAGGGGCTTTTAAACGACGGAGAAGAAGA
 40 ACTCAGTATCCGCGCATTTATCGATGCCAAAGGCAAAGCCGAGCTTTATCAACAATCA
 GGCCGCTACCTTGGCGCAACTCAAAGCCGTGCGTAGCCAGCTTATCGACATCCACGGGCA
 AAACGCCCATCATTCGCTTAATCAGGAAGCCGCCAGCGGAATTGTTGGACGCATTTCG
 GGGTAGCAGGGAGCAGGCGGAAACCGTCAGGCAGCTTTATCAAATTTGGGCAATGCGAA
 AAAAGCCCTCCAAGAGGCGCAGGAACACGCCGATGCCGTATTATCGAGCGGGAGCGTCT
 45 GGAATGGCAGTTTAAACGAATTGAATCAGTTGGACATTAAACAAGGCGAGTGGGAAGCCCT
 CAGCCAAAGCCACGACAGCCTTGCCCATTTCTGCCGAGCTGTTGCAGGCTGCCGAAGAAGT
 CGGAAGCAAGATTGACGGCGACAACGGCATCCAACGCCATATCTATCAATGTCAAAACT
 ATTGGCCATCTGCAAAACATCGAGCCGCGCTTTGCCGAGAGCCTGAATATGTTGGCAAG
 CATCGAAGCCGAATTGGGCGAAATCAGTGCCAATATGCGCGATGTGGCAGGTGCGAGCGA
 50 CATCAATCCCAACGAATTTGCCGCACAAGAGCAGCGCATGGGCGAGCTGATGGGGATGGC
 CGGAAAATACCGGATCGAGCCTGAAGAGTTCCCTGCCAAGTTGGCAGAAATCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 90>:

GNMCD84F gnm_90

5 TCGACTCTAGAGGATCCCCGGGCGTATTTCGGCGCGTGGCTTGCCACACCCAGCACCATTTC
GGCTTCAAAGCCAAAAATCAACACACCGTCAAAAATGCCGTCCGAACCCGTTTTTCAGAC
GGCATTTC AATTTGCCTAGTATAATGGCGCATTTTTCCAACAAGGAACCTACCATGCTGA
CCTCGGAACAAGTAAAAGCCATGATTGAAGGCGTGGCAAAATGCGAACATATCGAAGTAG
AAGGCGACGGACACCATTTTTTCGCCGTCATCGTTTCATCAGAATTTGAAGGCAAGGCAC
10 GCCTCGCGCGCCACCGCCTGATTAAAGACGGACTCAAAGCCCAACTGGAAAGTAACGAAC
TGCACGCACTTCCATTTTCGGTTGCCGCCACTCCGGCGGAATGGGCAGCCAAAGCACAAAT
AATCGCCACACAAAAATGCCGTCTGAAACCATTTCGTTTCAGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 91>:

GNMCD96F gnm_91

15 TTGCATGCCTGCAGGTCGACTCTAGAGGATCCCCGGCGGATTTTTGCCGCGTGTTCGCG
TCGGCGTGTGCGTTAAGGCTTCGAGGGCGTTTTCGGCGGCTTTGAGGCGGCTGCGTGTT
TCCGCCAGACCGTCCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 92>:

GNMCE20F gnm_92

20 CCGGGACCTTTTTTCTCCAGAAAGCCGGCAATGGGGCTGTCCGGCCGGGTGGGCATCAGC
AGCTCGATCAAGGTGTGCGCCACCACGAAGGCGCGGACCCGCACACCCTGAGTTCCACG
TCTTCGTCCGGGCTTCGGGGCGCAGGCCGAGCGGACATAAGGTGCGGCGCCTGATCC
AGATCGGGGGTGGCGATGGCGACGTGGTTCGAGGAGCATGGCCTCAGCTTATACCTGCTGA
25 CCAGGACGCGGCACACAAAAATGAACCGGGAACAGGTTTTTTCTGGACGCCGCCCCGCT
CGTTACACTCTGAAGTGTGACCCTGACCGCCCTGCTCGCCCTGCTGCTCTCGTACCTCAT
CGGCGCTATTCCGGCGGCGGCGTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 93>:

30 gnm_93

CTTCGTCAACGAAAGCGCGCAAAACATCCGCCGATCCTTGCCGAAGTGCCGATACACAT
CATCCAATTCCACGGCGACGAAGACGACGCATTCTGCCGCCAGTTCCACCGCCCCATAT
CAAAGCCATTTCGTGTTACAGCGGCATCAGACATCCGAAACGCCGCCACGCGCTTCCCCGA
CGCTCAGGCACTGCTGTTCGATGCCTACCATCCTTCGGAATACGGCGGCACCGGAAACCG
35 CTTGCACTGGACGCTGCTGGCGGAATATTCCGGGCAAACCGTGGGTGCTTGCCGGCGGGCT
GACCCCTGAAAACGTCCGGCAAGCCGTCCGCATCACCAGGAGCGGAATCGGTGATGTATC
CGGCGGTGTGGAAGCGTCTAAAGGCAAAAAAGATGCCGCCAAAGTCGCCGCTTTATCGC
AACCGCCAACCGCTATCCCGTTAAAGCAACAAAAATTGCCGCCGAATGACTTATAGTG
GATTAACAAAAACAGTACGGCGTTGCCTCGCCTTAGCTCAAAGAGAACGATTCTCTAAG
40 GTGCTGAAGCACCAAGTGAATCGGTTCCGTAATTTGTACTGTCTGCGGCTTCGTCGCC
TTGTCCTGATTTTTGTTAATCCACTATAATCTAAAAAATTATGCTATTAAATCAGTAAT
TTCTGATGAATTTTGAAGCTTAATCCCGTCATTCCCGCGCAAGCGGGAATCCGGCTCGT
TCGGTTTCGCTTGTTTTAAGTTTCGGGTAACCTCCACTTCGTCATTCCCGCGCAGGCGGG

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AATCCGGTTCATTGAATTTAGCTATTTAGAATAAATTTTGAACTCTAATCGCGTCATT
CCCACGAAAGTGGGAATCCAGGACGCAAAATCTCAAGAAACCGTTTTACCTGATAAGTTT
CCGCACTGACAGACCTAGATTCCCAGCTGCGCGGGAATGACGAATCCATCCATACGGAAA
CCTGCATCCCGTCATTCCCACGAAAGTGGGAATCCGGTTCGTTTCGGTTTCGCTTGTTTTA
5 AGTTTCGGGTAACTTCCACTTCGTCATTTCCACGAAAGTGGGAATCCAGTTTTTTGAGTT
TCAGTCATTTCCGATAAATTGCCTTAGCATTGAATGTCTAGATTCCCGCTACGCGGGAA
TGACGGATTTTAGGTTGGGGGCATTTATTGGAAAAAGCAGAAAACCAAAACAGCAACCT
GAAATTCGTCATTCCCAGCGCAGGCGGGAATCCAATGCTGAGTTTCAGCTATTTAGAAT
AAATTTTGAACTCTAATCGCGTCATTTCCACGAAAGTGGGAATCTAGAAATTTAATGTT
10 GCGGCACTAGCAAAAAAACCGAAACCGAACGACTAGATTCCCAGCTGCGCGGGAATGA
CGGTGCAGATGCCCGACGGTCTTTATAGTGGATTGAGACCTTTGCAATAACATAGGTTA
CTAAAATTTTATGCTCAATCTCATTTCAAATGCAAACTTTTCTGATTTTCTTACTT
TTTGCTCAATATTAGGAAGGTTTTAGGCAATTGAAAATTTTTTGCGCATTTTTATGCGT
CAAATTCGTTAACAGACTATTTTTGCAAAGGTCTCGGATTAACAAAAATCAGGACAAGG
15 CGACGAAGCCGACAGACAGTACAAATAGTACGGAACCGATTCACTTGGTGCTTCAGCACCT
TAGAGAATCGTCTCTTTGAGCTAAGGCGAGGCAACGCCGTACTGGTTTTTGTAAATCCA
CTATAATATGCACAGATAATATCAACCCGTTTTTAAACAAAGATATCCCGGCATTTGCGT
AAAGTTCAGCAAGAAAACTACAAACCCAGTCGCGCAGGAAGCGGATGTCGTCCGCCCAA
CCGGATTTGACTTTGACCCAGACCTTCAAAAATACTTTGGTATCAACAGTTTTCCATA
20 TCCAACCGCGCTTCGGTGGAATTTTCTTCAAACGTTCTCCGCCTTACCGATTAAATTT
GCGTTTTGGCTTTCCTTATCGACCAAAACGGCGATATAGATGCGGTTCAAACCGTCTTCC
TCTTCAAACGCTCCACTTCGACGTTTCATCGCATAAGGCAATTCCTCGCCCAAGTAGCGG
ACAATTTTTACGCACGATTTTCGCGCGCTGG

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 94>:

gnm_94

TTTTAGCTTGGTCTTAACCCGCCCTGCTTGAGTTGGGAAAGGCTTTCGACAAACACGA
TGCCCATCAGGTGGTCCAACCTCGTGCTGCACGCAATCGCCAACAAGCCGTCGCTCCA
30 GCGTGAACTTTTCGCCTTTTTCGTTCAAAGCCTCGACGGTTGCATAATCTACATTTGCAC
GTAAAGTATGCAAGTGGCAGCGACCTTCACGATACCATTCGCTACGGGCAATATCCGCAC
CATTTCAGACGCGCTGAAGTCATAATCTTAATGCCTTTAGCACCAGAACGCATTGCAATTT
GCATTGCTCGTTTCATAGCACGACGGAATTGAACGCGCTTTTCCAATGCTGGGCAATAC
CGTCAGCAATAATTTAGCATCCAACCTCAGGACGGCGAATCTCTTCAATATTTACATGAA
CAGGTACACCAATCAAGACTTGCAGTCAAGTTTCAAACCTCGATATCCTCACCTTTTT
35 TACCGATAACCACACCCGGACGAGCGGAGTGAATGGTAATGCGTGCAGATTTTGCAGGGC
GTTCAATAACCACTCGACCAACCGAAGCATTGGCCAATTTTACGCAATAATTGCGAA
CATCGATATCCTGCTTCAAACAGTAGAAAAGTCGGTGCTTTTAGCAAACCATTTTGAAG
CCCAGTCTTTAGTTACCGCCAGGCGAAAGCCTGTAGGGTTAATCTTTTGTCCCATAGCTT
TTCCTTAGTTACCACTGTACATTGATATGACAAGTTTGTTTTTCGATGCGGTTACCGC
40 GACCTTTGGCGGAGCTTGAAAACGTTTCAAGCTTGGGCCTTTGTCAACAAAGATAGTTA
CCAATTTTCACTTCATCAATGTCCGACCGTTATTGTGCTCGGCATTAGCAATAGCTGACT
CCAATACTTTTTTAATCAGCTCGGCACCTTTTTTAGGACTGAAAGCCAAAATATTCAAAG
CTTGGGCAACGCTCTTACCACGAATCAAATCAGCTACCAAACGAGCCTTTTGGCAGAGA
TACGGGCATTTTATGTTGTGCTTTACTCTCATGATTCACCTTATTTCTTTTAGCCTT
45 TTTATCGGCCAAGTGGCCTTTAAAGGTACGGGTCAATGAGAATTCGCTTAATTTATGACC
AACCATATTGTCGCTGATAAACACAGGCACATGGGTGCGGCCGTTGTGCACAGCAATGGT
CAGACCGATAAAATCAGGCAGAAATGGTAGAACGACGAGACCGTTTTAATCGGGCGTTT
GTCGTTGCTTGGCGGAGCAGCATCTACTTTTTTCAAGCAATGCAGGTCTACATATGGGCC
TTTTTCAATGAACGAGCCATACTAAATTAACCTTTATTGAGTAACGCGGACGAACAAT
50 CATGTTATCCGTGCGTTTGTATTACGAGTGCAGGTAGCCTTTAGCAGGAGTACCCCATGG
GCTGACCGGTTGCGGGGCTCGCCCGTACGGCCTTACCACCACCATGCGGGTGATCGAC
AGGGTTCATGACAACACCAGTACAGTCGGACGAATACCGGCCAACGATTGGCACCAGG
TTTACCGATTTTTTTTTCAGGCTTTCGCTCTTCGTTACCGACTTCACCGATGGTTGCACGGCA

ATCTACGTTGATTTTACGGACTTCGCCAGAGCGCAGGCGGACTTGAGCGTACGCGCCTTC
TTTAGCCAGCAATACCGCAGAAGCACCGGCAGAACGTGCAATTTGCGCACCTTTACCTGG
TTTCATTTTCGATACAGTGAATAGTTGTACCAACAGGAATATTGCGGATCGGCAGAGTGT
5 ACCTACTTTGATCGCAGCTTCAGCACCGGAAACCAATACTGCACCGGCTTGAATACCAG
AGGAGCAATAATGTAGCGACGCTACCATCTGCATAGCACAAACAGTGCATAAATGCAGT
ACGGTTAGGGTCATATTTCGATACGCTCTACTTTTGCAGGGATACCGTCTTTGTTACGTTT
AAAATCTACGACGCGGTAATGATGTTTATGACCACCACCTTTATGACGGGTAGTAATATG
ACCATTGTTGTTACGACCGGCAGTAGAATTTTCTTTCCAGCAGAGGTGCATAAGGTGC
10 ACCTTTGTACAAACCTTCTGTTACCACGCGAACCATGCCGCGACGGCCTGCAGAGGTCCG
CTTCATTTTAAAGATTGCCATTTTGTATTCTTATCTGCAGCTGCAGCAGCGGCTTCC
AAATCCAACCTTTGACCGGCAGCCAAGCTTACATAAGCCTTTTAAACATCGCTGCGACGA
CCTAAAGTGGCAGCAAAACGTTTAACTTTTACCTTTAATGGTAACAGTAGTAACGTCTGCA
ACTTGAACGCGGACAGCAGCTCAACAGCCGCTTAAATTTAGGTTTGGTTGCATTTGCC
AAAATTTTAAACGTCATTTGGTTACGTTTTCAGCCAATACGTTGCTTTTTTTCAGAAACG
15 ATAGGTGCCAAATCACTTGAGTCAAACGTTGTTGATTATACCCATTGCTCCTCTAATT
GTGCAACTGCATCTTTAGTGATGATTACTTTTTTGTAAACGAGCAAGCTGTAAGGATCAA
CTTGTTGAGCTTCCAAACCAACACGTTTGGCAAGTTGCGTGAAGCCAAGTAACATTCT
CGTCGAGCTGTTTGGTTACAAACAACACTTGCTCCAGACCCAGATTTTCACTTGTTCGG
CAAAAACCTTTGGTTTtaggagTTTCGGCAGTCAACGCCTCAATCGCAAACAAACGCTCGT
20 CACGAGTCAATTGGGACAGAATAGTCGCCATACCGGCACGGTACATTTTGCAGTTTACTT
TTTGAGTGAAGTTTTCGTCGGGTTTGTTCGGGAACGCGCGACCCCTTACGCCACAGCG
GAGAAGAAGTCATACCGGAACGGGCACGGCCGGTACCTTTTTGACGCCATGGTTTTTTGG
TTGAGTGTTTTACTTCGGCAGCGGTTTTTTGAGCGCGGTTACCGGAGCGGGCGTTTGCCA
AGTAGGCATTTACCAGCTGATGAACCAACGCTTCATTGTATTTCGCGGGCGAACAAGCAT
25 CAGAAACAGACAGACTGCCTGAACTTGTCTTTAGCGTCAATTACTTTCAATTCCATTA
CGCACCTACTTTACGCTGGGACGAACTACAACATCGCTGTTGACCGCACCCGGAACAGC
ACCTTTAAACCAACAGCAGTTGGCGTTCTGCGTCAACACGGACAACCTTCCAATTTTGAAC
AGTTGCTTTGGTGTGCGGTATTGGCCGGCCATGCGTTTACCGGGGAACACGCGACCCGG
GTCTTGCGCCATACCGATAGAGCCTGGAACACGGTGAGAACGGGAGTTACCGTGGGAAGT
30 ACGTTGGGCACCGAAGTTATGACGTTTAAATCGTGCCGAGAAACCTTTACCTTTAGAGGT
ACCGGTTACATCGACAGTTGACCGACTTCAAACATAGAAACGGTGATTTGCTCACCAGC
TTTCAATTACAGCAGTTTTTCTTCAGTCAAAGCAAACCTCAATCAAACCGCGACCGGCTTC
AACACCTGCTTTTGAAAGTGCCCGGCTTCGGCTTTGTTGACACGATTGGCTTTTTTCTG
ACCAAAGGTAACTTGAACGGCAGTATAGCCGTAGTATCTTTGGATTTTACTTGTGTAAC
35 GCGGTTGGCAGACATATCCAAACGGTTACCGGAACAGAAACACCCTGTTGTCGAACAC
GCGGGGTCAATTACCAACT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 95>:

gnm_95

40 GGTTTTAACTGCAAAACATCGTCCGATTCTGCGGATTCTGCCAAACGGCGAGATAGCC
GTAAGTATCGGCAGCCCGTGCCGCCGAGTCATCAGGCATAGTGCCGATACGGCCAGTAT
CTTTTTCATCATGATAAATCCCGACGGTTCGTCCAAATCTGTTGCATTATAAACA
AACAGGATAAGTCCCGCCTTATCGGCTTATCCCTCCCGCAGATTGCACCGCCGGGTATG
45 GCAAACCGATTTCAGCAGCGCAAATCCGCATACCGCCGCTTAGCGGCAAGCCGTTGTTT
TCAGACGGCATTGCGGCCAACCTTTGCGGCGGGCGAAAAACCTTGTCTATAATTTATCC
CGTTTCAAAATCAGCATACGGTCGGAAATGCAAAAAATATCTTTCAATTTGTTGAAGCCT
GCAAACTCCCCGAAATAGGGAAACGCCGCCCGGTTGAACGGCGCGCCGATATTCCG
ATGCCCTCCCCCGATACCTTCCGGCAAGCCCCAGAAATGCCCGGCAACAACATCCATCCG
50 GCAAAAATCCGAACAACACACCCGGCGGCGAGGAGTCAAACCGCCCCGCAAGCATC
CGCCATCAGAAAAACAAACCGCCTCCGAGGGCTTCATCCTAAAGGGCGTATTGTTGATA
ATGGTTTGGGTATATAATCCCCTATCGATTCTCCACGTCCGTGAGACACTTCAGCTATGGA
AACCCCGACCAACACCCCGCAACGCTCCCTGCGTCAAACAGTATCTACCTGCTGCCAA
TTCCTTTACTATCGCCGCGCTGTTTTCCGCGTTTTACGCAATCACCAATCCATGCACGG

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ACGTTATGAAACCGCCGCCATCGCGGTATTCTCTATGTTGCTGGACGGTATGGACGG
 GCGCGTGGCGCGGCTGACCAACAGCCAAAGCGCGTTCGGGGAGCAGCTCGACAGCCTTGC
 CGATATGGTCAGCTTCGGCGTTGCTCCCGCTCTGATTGCCTACAAATGGCAGCTTTGGCA
 GTTCGGCAAATCGGTTATTCGTCGCCCTTCATCTACTGCGCCTGCGCCGCCCTGCGCCT
 5 CGCCCTGTTCAACACACTCATCGGCAAGGTGGACAAACGCTGGTTTATCGGCGTGCCAG
 TCCGACTGCCGCCGCGTATTGTTCGGGCTGATTTGGGTCAACCACAGCGTCGAAAAATT
 CCCC GCCGCTCCACTGGTGGGCATTGGGCATCACACTGTTTGCCGCCCTGTCGATGATTGT
 CCAAATCCCTTTTTGGAGTTTAAAGAAATCAACATCCGCAGACAAGTCCCCTTTGTGCGG
 AATGCTGCTTGCCGCTTACTGCTGCTTCTGGTCACTTGGGAACCGTCGCTCGTCTCTT
 10 CCTGTTCTTTCTCGGATACAGCCTGTCCGGCTACATTATGGCGGCACGCCGATTTTGGAA
 AAAGTACAGAAAGGCGGATTAAATGTGGCATTGGGACATTATCTAATCCTGCTTGCCGT
 AGGCAGTGCGGCAGGTTTTATTGCCGCCCTGTTCCGGCTAGGCGGCGGCACGCTGATTGT
 CCCTGTCGTTTTATTGGGTGCTTGATTGTCAGGGTTTGGCACAACATCCTTACGCGCAACA
 CCTCGCCGTCGGCACATCCTTCGCCGCTCATGGTCTTACC CGCCTTTCCAGTATGCTGGG
 15 GCAGCACAAAAACAGGCGGTGCGACTGGAAAACCGTATTTACGATGATGCCGGGTATGAT
 ATTCGGCGTATTACGGGCGCACTCTCCGCAAAATATATCCCCGCGTTCGGGCTTCAAAT
 TTTCTTCATCCTGTTTTTAACCGCGCTCGCATTCAAACACTGCATACCGACCCTCAGAC
 GGCATCCCGCCCGCTGCCCGGACTGCCCGGACTGACTGCGGTTCCACACTGTTCCGGCAC
 AATGTCGAGCTGGGTGGGCATAGGCGCGGTTCACTTTCCGTCCCCTTCTTAATCCACTG
 20 CGGCTTCCCGCCCATAAAGCCATCGGCACATCATCCGGCCTTGCTGGCCGATTGCACT
 CTCGGCGCAATATCGTATCTGCTCAACGGCCTGAATATTGCAGGATTGCCCGAAGGGTC
 ACTGGGCTTCCTTTACCTGCCCGCGCTCGCGCTCCTCAGCGCGGCAACCATTGCCTTTGC
 CCCGCTCGGTGTCAAACCGCCCAAACTTTCTTCTGCCAACTCAAAAAATCTTCGGC
 ATTATGTTGCTTTTGATTGCCGGAATAATGCTGTACAACCTGCTTTAAACACACGAAAA
 25 AACCTTTTACCGTTTGCACAAGCAATTAATCAGGACAAAGCTGCCAGTCTCCTGTTCC
 GACAAAAGGACAGACAACCTGACCGAGACCTTTGCAGAATATACGAAAAACGACAGATAC
 CGTCTGAAACCACATTCCGACAATCGGCAGGGTTTACAGCGGCATCTGATAATTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 96>:

30 **gnm_96**
 CCTTATTGTGGGAAGTATGCGGCGAAGAGGAATTTACCGCCGAAGCCATCGCCGAAGAAT
 ATTACGGCCATGCGCCGACCAAAACCGAGCTGCGGGCAACTTTGATTGCGCTTTACGCCG
 CGCCGATGTATTTCTACAAAAAGCCAAAGGCGTGTTCAAAGCCGCGCCGAAGAACTT
 TAAACAAGCACTTGCCGCCATCGAACGCAAAAAACAGCAAGACGCGCAATCGACGCTT
 35 GGGCAGAAGCCTAAGGCGTGGACTCCGCCACCACTCAAATCAGCTCTGTAAAACCGGTC
 TGAGTCTTCTTTCCCCCGTACTCAATAATTTATCCGCCGCTCTTTACCACCAATTCA
 TTTACAATTTGTAAAAATCGTGTGCCTTGTAAAGTTGCGGCAATTCAAAGCCTCCTGA
 TAAATATTTAATGAGCTTTATGAAATTCTTGTCTAACTGATTTTTATCCATCATTCTT
 CTTCCAATATTTAGACCGGATTATTCTTACCCAGAATTTCTTTCTCATCCGCTCCCGT
 40 CTGATCACCTACCGAATCAGGTCGTCTGAAACAGTCTGAAATCGCTTTTCAGACGACCCT
 CAGCCTTTTTTCATACCTTCGTAATAATACGACTGCTCGATACCTTTAAAGATGATTTC
 CGGTTGTCCACATCGTCAGTCAGGTTGTCTTTAACAGAAAGCGCAGTTCTAAATCGTTG
 ACGGGGCTGCGTTCCATCGCCTGCAATAACAGGGTTTACTTACATTTTGCCAGTTACAG
 ACTTTTTTCAGGTTTTTTTTTCAGCACCAATCCAGCCAGATGCGGGTACTTCTGCCATTA
 45 CCTTCCAAAAACCGATGGGCAATGTTCAATTTCAACATATTTGGCGATGATTTCTTCAAAA
 GTCCGCTCGGGCATCTGCTCGATTTTAACCAAGCCTCTTTTAAATACATGGCGTTGGCA
 AAACGAAAACCGCCTTTGGAATGTTGTCTTCCCTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 97>:

gnm_97

CTTGGTGTGATACCATTCGATTCCATTGATGATAATTCCATTGATTCTATGCGATGA
TTCCATTTCCTTTCCATTAGAAGCGGACACGGCGAAGGCGATATTTTGGTATTCTGCGG
5 GGCGAGCGCGAAATCCGCGAAATGCCGAAGCCCTGCGCAAATCCACGCTGCGCCGCAAC
GACGAAATCCTGCCCTGTTCGCACGCCTGTTCGCACGCCGAGCAGACAAAATCTTCCAC
CCCTCAGGCGCGAAACGCCGCATCGTATTGGCAACCAACGTCGCCGAAACCTCGCTTACC
GTGCCGGGCAATCAAATACGTCATCGACACCGGCCTCGCGCGTGTAAACGCTATTCGCGCA
CGGGCGAAAGTGGAGCAGCTTCATATCGAAAAATCTCCCAAGCCGCGCCCGCCAACGA
TCCGGCCGCTGCGGACGCGTCTCCGAGGCGTGTGTATCCGACTGTTTCAGAAGAAGAT
10 TTTAACAGCCGCCCGAATTTACCGACCCCGAAATCGTCCGAGCAACCTCGCCGCGCTC
ATCCTGCGCATGGCAGCATTGAAACTCGGCGATGTGGCGGCATTCCCGTTTTTAGAAATG
CCCGATTACGGTATATCAATGACGGTTTTTCAGGTGTGTGGAGTTGGGGCGGTGGAG
GCCGTCTGAAAACAGGCAGACATAAAAGAAAAATCCGCGTAGAGTGATGAAACTTACCCT
TGCTTTAATAAGTAGAAAAATGGTGGGTTTACGTCCCCCCTGCGGCTACTAAAAAATAT
15 AAGAGTAAACCAACCTTTTTGAAAGAAAAATGTATGGACGAAATCAAATACCAAAAAAG
TGGAATTACAAACCAACTAGAAAATGAAAAGATTGTTTTATCGAAAGGTTCTACCACGA
TTATTGTTGGTGCTAATGGCACAGGGAAAAACAAGATTAGCTGTTTATATTGAAGAACAAT
TAAAGGAAAAAGCACACAGAATTCGGCTCATAGAGCATTAAATTAACCCTAATGTCA
ATAAAATACCAAGAAAGAGTGCCAAAACATATCTATCTTATGGTCAGAACTGGGATGGAA
20 TCGATGTATCAAATAGAAAAAATATAGATGGGATAATAACTCATATACTCATTACTCA
ACGATTTTGATTGGTTATTACAAATTTTATTCGCTCAACAAAATATATTGCGGTAGCAA
ATAATCAAAGCTCAACCGTAATGAAAAGTAACCAATTCAAAAACAAAGCTAGATATTT
TGCAAGAAGCATGGGAAACATTATTACCACACAGAAAATTACATATTACAGCAGATGATA
TTCAAGTCTCTGCTGTAGATAATGAGGAATTGTATTCTGCCTCAAATATGAGTGATGGAG
25 AGCGAGCACTTTTCTATATTCTTGGACAAGTTTTGTGAGTAGATGACGGTTCTGTCTTAA
TTTTTGATGAGCCTGAATTACATATTCTATAATCAATTATTTCAAATCTATGGGATAAAA
TTGAAGAATTACGACCTGATTGTTTCTAATCATTACACAGATATTGAATTTGCTG
CAACTCGAGTAGCTAAAAAATATGTTATCAGAAATATTATCCGACCCCTGCTTGGGATA
TTTCTGAAGTTCTGAAAGTAATTTTGATGAAGAAACAATAACGATGATTTAGGTAGCC
30 GTAAGCCAATATTATTTGTTGAGGGCAACAATAAGTTTAGATATTGCTACTTACCGCT
ATTGTTATCTGATTGGACCATCATACCCAAAGGGGCATGCAAAGATGTCAATCAATCAG
TATCATCGCTGAAAAAATTAAGTAATGAAATGCCATTACTAACTTAAATGTTTCAAGGTA
TTGTGATTTAGATAGTAGGGATGAAAGAGAAATGAACAATTAATAATTTGGGTATTT
ACATTTTACCTGTATCCGAAATTGAAATCTTTTAGCTTAACTGATGTAGCAAAAGAGA
35 TATTGAACTAATCAATATTGAGATGAAGAAATTACTCAATAAACTTAATGGATTTAAAT
CCGAATAATTAATATATAGATAATGAATTAAGACGATAAATTAGACGAATTTGTTG
TAAACAGGTTTCGACGTAAAATTGATAATTTTAAAAAATATTGATTATCCTCCAAAA
TAACAAGTACTGATGAAAAATCATTACTTAATGAAATTTCTACTTTAACAGAACAGA
AAATTGAAACATGGATTTGAGAAATTAAGAAATGAAATCAAGATGTATTGAACAGCAAG
40 ATTTGGATAAATTACTTACTATATATGATAATAAAGGACTCTTGGCTAAATCAGCTTGTG
TTTTAAAAGGAATGCGTAACAAACATGAATTTGAAAGCTGGATAATGAGAACATTAAAG
GAAGGAATAAGATTTTATTGATGCAATCAGACAGAACTTCCAATTCTGGATTAAATAA
AACCATCTGAAATTTACCTTCAGATACAGATATATTTATGAAAAATCATCAAACCTACA
CTCTCTTTCCCTACTTCGAGTAGCCTGAAACCTTGCGCAGACAAACAAGGCCTGTCTGAA
45 GACCGCAGCCAATACCGCCTGACCAAACTCGGCGAACAATGGCGCACCTGCCTATCGAC
CCGAAAATTGCGCGTATTTTGTAGTATTATCCGTTTTTAAAAATGCCCGATTGCGGGT
ATATCAATGACGGTTTTTCAGGTATTGCTGGAATTGGGGCGGTGGAGGCCGTCTGAAAT
AAAATCTTTCTTTATAAAAAGGCAGGCCATGTTTCATTTTCAGACGGCTAAATCATTGA
GAACTAAAACTATTAAAAAGGGAATATTGGGTTTTAAACTCAATCGGTAAATTTTTTA
50 TTGTGAAATATTAATGATGAAAAATCTTTCCTTACGCTTGTCTGTATTCTGCTTTACT
TACCGCCAGCGAAATTGCCTATCGCTTGTATTGTTGGGATTGAAACCTTACCGGCGGCAAA
AATTGCGGAAACGTTTTCGCTGACATTTGTGATTGCTGCGCTGTATCTGTTGCGCGTTA
TAAGGTACGCGTTTGTGATTGCGGTGTTTTTTCGCTTCAGCATTATTGCCAACAATGT
GCATTACGCGGTTTATCAAAGCTGGATGACGGGCATCAATTATTGGCTGATGCTGAAAGA
55 GGTACCAGAGTCGGCAGCGCGGGTGCCTCGATGTTGGATAAGTTGTGGCTGCCTGTGTT
GTGGGGCGTGTGGAAGTCATGTGTTTTGCAGCCTTGCCAAGTTCCGCGTAAGACGCA

TTTTTCTGCCGATATACTGTTTGCCCTTCCTAATGCTGATGATTTTCGTGCGTTTCGTTCGA
CACGAAACAAGAGCACGGTATTTTCGCCCAAACCGACATACAGCCGCATCAAAGCCAATTA
TTTCAGCTTCGGTTATTTTGTCGGACGCGTGTGCCGTATCAGTTGTTTGATTTAAGCAG
GATTCGCCGCTTTAAGCAGCCTGCTCCAAGCAAATCGGGCAGGGCAGTGTCAAAATAT
5 CGTCTGATTATGGGCGAAAGCGAAAGCGCGGCGCATTTGAAGCTGTTTGCTACGGACG
CGAACTTCGCCGTTTTTAACCCGGCTGTGCGAAGCCGATTTAAGCCGATTGTGAAACA
AAGTTATTCGCGAGGCTTTATGACTGCAGTGTCCCTGCCAGTTTTTCAATGCGATACC
GCACGCCAACGGCTTGGAACAAATCAGCGGCGGCGATACCAATATGTTCCGCTCGCCAA
10 AGAGCAGGGCTATGAAACGTATTTTACAGCGCGCAGGCGAAAACGAGATGGCGATTTT
GAACCTAATCGGTAAGAAATGGATAGACCATCTGATTACGCCGACGCAACTTGGCTACGG
CAACGGCGACAATATGCCCGATGAGAAGCTGCTGCCGTTGTTGACAAAATCAATTTGCA
GCAGGGCAAGCATTTTATCGTGTGACCAACGCGGTTTCGACGCCCATACGGCGCATT
GTTGCAGCCTCAAGATAAAGTATTCGGCGAAGCCGATATTGTGGATAAGTACGACAACAC
15 CATCCACAAAACCGACCAATGATTCAAACCGTATTCGAGCAGCTGCAAAAGCAGCCTGA
CGGCAACTGGCTGTTTGCTATACCTCCGATCATGGCCAGTATGTTGCCAAGATATCTA
CAATCAAGGCAGGTCAGCCCGACAGCTATCTCGTGCCGCTAGTGTGTACAGCCCGGA
TAAGGCCGTGCAACAGGCTGCCAACAGGCTTTTGGCCTTGCAGATTGCTTCCATCA
GCAGCTTTCAACGTTTCTGATTACACGTTGGGCTACGATATGCCGTTTCAGGTTGTGCG
CGAAGGCTCGGTAACGGGCAACCTGATTACGGGTGATGCAGGCAGCTTGAACATTCGCGA
20 CGGCAAGGCGGAATATGTTTATCCGCAATGAGTGGCGTAAAAACCAATAAAGACAAATTT
AGATGATGTGCGGGGAAGATGCCCGACCGACAAGACTATGCAAAATATGAAAACCAAGTA
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AGTTCGGGTATATCGGTACCAACACGCGTTACCGCTGACCAAACTCGGCGAACAGATA
GCGCGCTTACCCATCGACCCGAAAATCGCGCGCATTTTGCTGGCGGCGAAGAAACACGAC
25 TGCATGGCGGAAATATTGGTGATTGCGTCCGCGCTGTCGATTCAAGACCCGCGGAGCGG
CCGCTAGAAGCGCGGATGCCCTAGCCAAGGCGCAGAGCGTTTTACCGACAAGCAGTCC
GATTTCTTGCCTATCTGAACATTTGGGACAGCTTCCAGCGCGAACGCGATAAAGGCTTG
TCCAACAAGCAGCTGGTGCAGTGGTGCCGCAATATTTCTGTGCGACCTGCGGATGCGC
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30 AAGGAAGCCGCTTTTCAGACGACCTCCCGAAGTCAGGCAGCTCACGTGCTGAAAATGCG
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GCCCAATCCGCGCGGCCAAAGAAGCGGGCTACGAACAAATCCACGCGCCCTGCTCACT
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35 ATGGCGGCGAATTTGGTTGAACCAACGCGCCTTTACGCGCGGACGTCGCGTTATCCAG
CCCGAATGGATAGAGCAGGAAGCGCGCACCTCGTCCGCTATCATTATTCGAGCCGCAT
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40 AACAAAAGCTGATTAAAGAAATTACCGAACTCGAACACAAATCGCGCAAGCAAGACGTG
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45 GCAACTGCAAAAATGTTGGGTTTGACAACTCAACCTACGCTGCCCAACAAACCAACCC
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50 TCAACAAACCTCTCCCGCAGGAGAGGGGAACAGAGTGCTCAGCTTCAACGTTTTCAGAC
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5 AAAACCGCAGGCGACATCCGCATATTCGAGCAAATCAACCAAGACGAATGGGCCGCGTTC
AGGCTGCCCGAACACTGCTATTTCAACCTCCGCATTATCGACGACGGCGGACAAGAGCTT
GCCGGCGGCCGCAAACTGCACGAATTGCAACAACAACTCGGTCAAGCTGCCGCCGTTACC
TTCCGTGACAACACCCAAGAATTGAGCGCGACAACGTCAACGCATGGGACATCGGCACC
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GACGAGCTGCCGCGCAACGAAAAAGCCTTCAAAGAACAAATCAAACGCGCCCGCAGCCGC
15 CTGCCCCCGCTCAAAGAAGCCCTCAGCCGCTACCTGCAGGAAACCGCCGCGCTCTACGCC
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20 CTGATTAAACAAGGTCTCCCATTTAGACGGCCTCGCCGCGTTTAAATGGATGATTGAA
GAATTGAGGGTGTGCTGTTGCGCGCAGGAATTGAAGACACCGTATCCGGTGTGCGTGAAG
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CTGTTTTTTTATTGACTAATCGAAGTTTCTATATCTATTTAAGTCCCTCTCAACTAAT
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25 ATACCAATGCCATCATTTTTTAAATAGTAAGCATTTTACGTAATGCGCTTGATATTTCC
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35 TCTGTCTCGAGCCAGTCATTTAACAAAAAGCCGTAATGCTATGATTTAATGCTTGTTTT
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45 CCTTTCCTTGCGGTTGTCATTGGCATCCCGTGATGCCCTACCAACATCTGAAGTAGCAGTA
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TGCCGATACATCCCAATGTATTTCTGTCAGATAATGCTGCTTTGTCCTGAATATTATTA
TGCCGAGTAAGTACAATCTCTTAAAGCATCTCCTGAGATAAGTACTTGCTGATTTCACTT
50 AAAGCAATATCACTATTTGTTGCTCGACTATTTCTCTACTTCAAATGGGAAAGGTTCT
GATAATGCAAATTCAGCAATAAATTTCTTAATTTTATACGTAATGTTTACACAATATA
TCAGGAAATATGAAACGTACAATATCTATAAAGCAATTAATAAGTAGCCTGCCCAA
CCGTGTCCTTATCTTTGCGCACACCCGACCTGCAAATCACGCAAACTTGGAAATCCGTGT
GTAGGGTGTGTGCGGTACATACGCACGCAGTCTTTTAAACCACAGCCCTTCCCACTAA
55 ACCAAAAGGTGCTCTGAACCCTATTTTCAGACGACCTTTTGCCACTTTGTAAACAAATC
TTCCACCATCTCTCCCCAACATCGCCCGAACAGTAACTTCTCATATTTCAACAAC
TCCTTGAAGCAAACCATGTCTGGTATCTACCTACCCCGCCTATTCCCGCCCCATATCGC

-627-

CGAACGCGGCCTGTTGTATTTTCAGCAGGGCAAGGTTCTCGATGTCCGAAAACTTCCGC
CGGGCATTATCGGGCGGAGGTGTGCGGTTTCGAAAACTATTGGGTATAGTTGAAGCTGGA
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TACCTTAAATTACTATATTGCATAGGCAAAATACAAGCCTATAACGAATTGGAAACAAAA
5 TGCCGTCTGAAACATCTTCAGACGGCATTATAAAATCTGTTACCTTTTCAGATGAGTA
ATGTACACCCTTATACAATTTTTGCTACTATGCCCCATAAATCCACGGCTAAAGATATCC
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TCGACTTATCCGAATCGGATAATATATTTAGAATGGAAGGGGCGAGAAACCTATAGGCAAT
ATCAGAGAGAAAAACAAACCATCCCCATAAAAAGGCGTTGTCTTTCCATTTATTA AAAA
10 ACTTCTGTCAATCAATGAAATAAACCCAAACGACCAACGATTGGGTTTATTCTTTTATC
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CATTTCCATCAAGGCGGAAAACCGCACAATACTGAAACACTATCGATCGATTGTAAACA
AGCCTACTTAAGTAACTGCAGTCCTTATCATTTCCCTTAAAATAATCCAGCCCGTCACT
ACACGAACTGGCGGACTTCTTGCAATAAAGGTTACTAGATTTTCATTATCTTAATAAT
15 AAAAGGATTTTTATCTTTATCTATGCTACCGCTTCAACATGAATTTACTGTCTAAAGC
CCCGCGCGGATTCCATTCAAACGGATACAAAAGCCTTCTGCCTCTTTAATCGGCAAACT
TGGCCACTTGGTAGATGTTTGTTTAAACCTCCATTCTGCAGATAAACTTTCCATAAA
ATGTGCATTTTCTAACAGGCTGCCCGCACTGCATTATCTTTGCTTTCTCAACATAATT
GCGATAGCTCGGATAAACAATTAAGCAAGTACAGACAATATCAAGACCACTGATATTAA
20 TTCAACCAGCGTAACCCCCGATTATCAGTCATTACTTTACTTCCAATAAGAACAGATTA
TTCAACATATTTCTTTGAACAGACTTACTATCCCATTCACAGTATGCATATTTCCCACT
CTATTTTTTAGCGGCCGATAGCCGGTTTGGCTGGGCCTTTTGGTGCGGGCGCGCCGAC
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25 CGCCGGGCTATGCCCGGCAGCGCTTCCAACCTCTGCTGCGAAGCCGATGATGTTTAC
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TCTAAATGAATATCCCAAAGTTTCAAGCCGTTCTCCGCAACCCGACCGGACACCGTA
CGGATGCCGTCCCGCCATCACCGACATTTTTTCCGGGCAAGCAAACATTTTTTCCGGGC
30 AAAGCAAAAACCCCGAATAATCGGGGGTTTTCTGAATGGGTGTTTGGCAGTGACCTACT
TTCGATGGAAGAATCACACTATCATCGGCGCTGAGTCGTTTACGGTCCTGTTCCGGAT
GGGAAGGCGTGGGACCAACTCGCTATGGCCGCCAAACTTAAACTGTTACAAATCGGTAAA
GCCTTAATCAATATATTTCGGTAATGACTGAATCAGTCAGTAAGCTTTTATCTTGAAGT
TCTTCAAATGATAGAGTCAAGCCTCACGAGCAATTAGTATGGGTTAGCTTCACGCGTTAC
35 CGCGCTTCCACACCCACCTATCAACGTCCTGGTCTCGAACGACTCTTTAGTGCGGTTAA
ACCGCAAGGGAAGTCTCATCTTCAGGCGAGTTTCGCGCTTAGATGCTTTAGCGCTTATC
TCTTCCGAACCTTAGCTACCCGCTATGCAACTGGCGTTACAACCGGTACACCATAGGTTT
GTGACTCCGGTCTCTGCTACTAGGAGCAGCCCCGTCAACTTCCAACGCCCCTGCA
GATAGGGACAACTGTCT

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 98>:

gnm_98

CTATATTTTACAATTTTTGGTCATATGAATGTCTGTTCCGTTTACAGGCAAACCGTGTTT
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45 ATTTCTTATTCCAATAAAATCAGGTTAGATGATATATTGCCGCTTCTGTCTGCAGCCGT
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AACCCCTGCCCCATATCGATTGGTCGGCACAATCATCGTACCGCTGCTTACTTTGATG
50 TTCACGCCCTTCTGTTCCGCTGGGCGCGTCCGATTCTATCGATTGCGCAACTTCCGC
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GCTGTTCTGTGGGGCGTGTTTGGTGCTGACTCCGTATGTGCGGCGGGCGTATCAGATG
CCGTTGGCTCAAATGGCAAACTACGGTATTCTGATCAATGCGATTCTGTTCCGCGCTCAAC

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5 CAGATGTTCTGCTGACTGGCTTTCAGACGGCATAAACGCTCCAGAAAACGCGGCAGGACA
TATTGCCCTGCCGCGTTTTCTGTAGTGTAACTTATTTTTTTCATCATTATTAGAACCA
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10 TCGGTGAAATCGTCAAACGCTTGGATGAAGGCTTGACCAATCAAATACCAGATAAACAAA
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TTAAATATTTCTGGCACCATAAGTACAATGACAAAGACAATCATGCCAATGATTAAAT
CAGGATAGCTAGAATGAGTCAATAACGTCAATGCTCCCGCCGCTATCACACCGATATTGA
TGATAATGTCATTGGATGTAAAAATCATGCTGGCTTTGATATGGATTCTTTATTTTGAT
15 TTTTGCTCAGTAGATATAAGCACAGCCAGTTTGCAATCAATGCCAAAAATGCCGTGCCAA
TCATCAGTTGATAATTGGGCAGCTGCTCAGCACCAGATAAACGCCTAATCACTTCTATCA
CCCCAAATAACGCCAATATTATCTGCGTTATCCCGCCAAAAATGCCACACGTTTTTTAT
ACGCCAGCGTCATACCAATGGCTGATAGCGCCAATATATAGACAAAGCTGTCCGCCAGCA
TATCTAGACTATCAGCAATCAGCCCCATAGAATTAGCAAAAATACCAACCGAACACTCTA
20 TGATAAAAAACACAAAGTTAATCATGAGCACTTGATATAATAATCTTTTTCTAAGTGCT
CATCAGGCTTGTAAACACTATCTTATCAACAATCACTTCGGTGGAATGATATGACTAT
CAAAATTAAGCGGTTCAAGTACTTGTAATCGTTGTATCTTGATTATCGTGATAGACGG
TTAAGCACCGCCAGCAATATCAAACCTGTAATTCATAAATATCAGACACATCTTTAAAC
GCATGCCAATGAGCTGTTCTTCGGACGGGCAGTCCATTTGGTAATGTTAAAAATGGTCT
25 TTTTCATCTATTTAGTTCCTTGTTTTGATCAGGTTGGCTCAAATAAATCTGTGTTTATAT
TGCTGCTTGGTAATTTTTGGATGGTTTGAGTAAATGATTAGGTTAAAAATTTACCTTTGG
AAGTACCGCCACGCATAATAGTTTAGATATGTTTATAATCTCTGGATAAAAAACGTAAT
AAGTGCTTACTGGATAACAAAGTCCAAACCAATAGCAGGCAAAATAAGGCATCCACCCCC
CTTCTTCATTAAGGATATATATTGAGAAACAAATCGCAACTAACAGAAAAAACTTGCGA
30 GATAAGCCATTTCAATCCCTATTCAAGAATCTAGCCAAGATAGGTATTTTGTATTCTA
CAAAAAAGAAAGGCATTTCCAAGGGAACATGTCAGATAAAAACTTTGTTTATTTTTTA
CTATAGATAGAACCTTGCTTCTCAAGAGAAAGCCATTAATAATACCGATGACAGCTATTA
ATATATAGAGAAATAGTATAAGTATGAATAATCTTCATTAGACAAAAAGAGAAATGGCAG
ATAAATTACATACGATATATTGGAATATAAAATATTTACGGTCTAACCTTGTTCAAGTTG
35 CAATTTTTTAAAAATGCCTTGCATAAAAAAATCAAAGGCGTCCATTAACTATCTTTCA
CATTAGAAATTTAAAGCTAAATAATACGACAAACATGTGAAGTACTATTCATGGTTTA
TTTAAAAAATAAATACTATTCTGAACATTATTTAGATACAGAAATTAACAAATTAGAATA
AACAAAGCTTTTAAATACTTTAATTTTATGGAAAGCTATAAAAGGAATACTTTTACA
CACTAGTCACTTCTTTTAAAGAGGCAAAAGGGATTGGGAAGGTCGTCTTGAGATAAGCA
40 CTGGTATTTCCGCCAATGGTAAATAGAGTTTACCTCAAATAGGGTAGAACCTCCTTCATC
TGTCAGTTAATAACAGCCACTTTTACAATGCCCTGTCAAATAAAGCGGCACGCCCGATT
TTTCACTCATCGTCATCAAATAACCCATCACCTTTTGGGGCCATTGATGCCGCGCACCA
CGGTCAGATTCCTCAAACGGGGAAACCAAAATATCCTCCATACCGATTCCGCCGTTGA
TGCCGCTCTGAAGCACCGTCCATCAAATTTCCAACCTTGCAAATCTGCGTTTATCCGTT
45 CGAGGTATTGGGCGGTTTTATTCAAATTTGGCGGAAAAGCTGCCGATGCTTTTCTTTTTT
TGCTGTAAATATTTACCGCTTCCGCGGTTGCAAATTCAGGCAGCCCGATTTTGATCA
CGCGCGGCTGCACCGCTTTGTGCTGTATCCGCCACCTTGTCAGCCACGCCCGTATCT
CGGGGCGGACTTCGTCTTTAGACGGTCTTCGCGGTGGAATGCCGCACAATGTCCAAAC
TCTCGCCCATAAACGAACCGTCTTCTTTTGCAGGACGGGCACTTGTTTCGCACCGATCA
50 TACCGATCGGCGTTGCCCTCGTCGTTTGCCAGCACGGCTTCTTCAACGTCCGCGCCAA
ACAGCCCGGCAGCCATCCGCGCACGCACGCAAAACGGGCAATGGTCGTAAATATACAGTT
TCATCAAATATTTCTCGTCAACCTGTCCGTACCGACTACCTTAACACCCCGCGCCGCC
GAAACAAGTTTATCTTCCCGCCTATGCACCGTAAATAAATAGCTGTTACAATAAATCG
TTTTTATCGGAACGGAAGACCCCATCATGACCGCCATCAGCCCGATTCAAGACACGCAAA
55 GCGCGACTCTGCAAGAATTGCGCGAATGGTTCGACAGCTACTGCGCGCTCTGCCGGAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 99>:

gnm_99

5 TCATACATATAATTAATATAGAGCCTCAAGCAGATCAATTCCAAATATATGCTGAGTTTG
TAGCTATGTTAAGTTTCATGGATTTCTAACTCTAATCCTTATCTTTCGAGGTGATGATTG
TCTTGGTCCAACCTCAAATTGTTCTCATTCTATGAAGGACAACATATCTTACTTGGACCAA
ATAAGTTCCTTAATCTTTAAACAAAATCAATTGGCGTTAGTAAATTAATTCATGTCCTAT
ACATATTACTCTAGGTCTAAGCTTACTTCAACTGACATGGGATCTCATAATCACTGGTTT
ACTTTAGTCAAGTGGTAAATGGGAAAGAATCTTGGCAAATTGTTGAAAGGGAAGTGGCAC
10 ACaAGAGAAAGTAAGAAACCGATAGGAGTTATTATTCCTTCATGATCAGAAGTGAGATTG
AGAGAATCTCACAAGACAATCATATCTTGTGTATAGTGACATGTTCAAGAATAGGGT
TTTTAATTGTTGACACACACGATCCAATCCATCAAACCCAGCCTGATCTCTTTTTCGT
GGCTGCGAAAAATACCGTCAATCAAGAGAAGAATAAGCATATCTCTCTGCTTATCCCCA
CCACTTTGGGCTATCTCACACCCACACCTTCATCTGAGCATGATTCTTGAACAAAATAA
15 TATTCTTCGAGAGAAAAAGTAAAAGCTTGGTCCACATAAATTGTAAGATTCTAATCCGAT
CATGCATAAAAAAGTTGCAAATACATATATAAAACATGTGCGGATGTACCATATTCTTTA
GCATCTGCAACAAAGAAACAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 100>:

gnm_100

20 CGACCCGAGTCTTCGAGTAGGACCCACCTCTGAATCTGTGACAGACGCCGGTTTCGTTCT
CTCTCTCTCCTTTTTTCTCTCTTTGCTTTTCCAAAAATAAAGTTGTCTTTTTTTATT
TATAATAAAATGATTTGTTGTTTCACAGTGTGTGTTGTTTGGGGTAAAAAGAAAAT
CATAAGGATGCTTCAATATTTGTTTTGTTTGGTTGAGTGATTGCTGAAGCCAACCTAA
25 AAGAGAGAGAAGAGAAGAGTGACTCTGTGTGTGTGTGCAAGAAAGTCTTCTCTTTCACAC
CTTTCGTTTTCTCGAACCTCTCCTTTAAAGATGGTGGAGGAATCTTGGGTTTGACAACTC
ATTAACACTGACCTCTTTTTAGCTCTACAAGCATCCAAGGAACCCCTCTTACTTTTCCC
TCTTCTTCATCCCTCTCTCTATATCTCCCAATTCCTTCTTTTTTAACTTGATC
TTCTTCTTATAAGAGACTCAGA

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 101>:

gnm_101

35 TAGCTTGAGAAAAGACTCAAGTTTGTCTGCTCCACGCCCCAATAAACTCGCATAAAAGAA
TTATTCTTGTTGTATGACCTTCTTCCAAAACGGAACGCCATCCCTGCATGTAATATATAC
ATGACACAATATTAATATTCTTTTTACTCTGTAGTTGAATGTGGTATTTCGTTTCTTTT
CTCTTTTAGTTTCAGAAGGCTTGAACCGCAACCCACTTCACGGCTCATTAAGCTCTCTA
TCATACAGAAACCATATTGTAACAGATGTACTGGAAAAGAAGTGAACATGATAATGACA
GCGAGACGTATCATTTACTCTAGAGGATTGTGAAAAGAAAAAATTACCTCTGAGAGGCA
CTCCAAGAGCATTTTGCAGCATTCTTGATGAAGTGGAACTCCAACCGGTGAGCTAG
40 AAAGAGAAGATGAATCAACTCGGTGCCAAAATTACAGTGTCTTCCATGTTCAACTCTCC
ACTATACATGAAATTCATCATAGCCTTGAATGCTTCTGGTGATACATCGGTAGGTAAAT
CGTTGATGAATGGCTTCACTCATCCCATTTGTAACATCTGGATGTTCATAGAGAATAA
ATAAGAAAATTGAGAATCAATATATTCATGTACATCAGAACTGCGACACTAAAAGAGATT
CTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 102>:

gnm_102

```
5 TTTGCATT CAGGAGTAGCGGTTGACAAATTCAGCAAATTGAGAATATCCAGAGATTGGTG
TTCTCTTAAGTGTTGATTACTATTGTTTATATCATTACTACAGCTCTCAGACCCAACTGT
GAAGTATGCTGTTGCTGTCTCCTCTGCTCAAAATATTGTTTTGCCTTCAGGTGCAACA
AAGATGAAATTAAAAGTGTAGCACAATGGGAAGCATATGCTGACAAACATCTCATAAAG
AGAACAAGAAGGAGCTTACACACCTCTTCTTCACTGACGTGTGTGACTGATTACCCCAA
AGGTTCCCAAGAAAACAATAACAAGTCAAAATGAAAACAATTATAAGAAAAATAAGCTAT
10 TATCCCAACACCAAGAGGTTTTAGCTTCACCCCATTTATAACGGACCTCTGAATTTGAAA
TATCACTAAAAGGAAAAAGTCACTCACAGCGGCTACTTTCCGCCTCGATCCTCCCATCCA
TTGCAGCATTCGTAGAAATTCGGTCTTTAGAGTTTTCAAATTGTACACTGCACAAAGA
TTTCGAAATTAATTTTCGACGCCACCACGAACAATTCACCCAACGATTCCATACTAG
GTTTCGATTCACATCAATTAGACACTGAGACTGAAAATTTTGAATCCTAATCCTAAATT
15 TCCGATCAGATCTAGAAGAACTAGGTAAATTTCTACGAAATCCCTCAAAAAACATACA
GATTCGAGAGAGGAGAAAGAGATATATTTAGAAAATTCGAGAAGCTTCGACAGTATCTGA
ATCGCGTCCCCAAAACGGAGCTCGGAGCATAGAAACGATTACGAGAACTTGATAATTGCT
GCTACCGAATGATGAATCCGATGATCTTTGATCAAATTTGCAGCAGGGGAAATCAAAGAC
AACGACACGAACGGTCTTTCAAATTTCGAAAATTTCTTGTAAGCA
20
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 103>:

GNMCG08F gnm_103

```
25 CCCAGTTTGCTTTATTTTGTAAATCGCTTGTGCTTGTGTGCGACACCTCAACTTGAGAGT
AGTATGTTATTGAGATGACGCAAAATTTATACATTCTTATGTTGTACCTGTTATACTTTC
ACCAGGCTGAAGAATTAAGAAAATGCCTTTGGGAAAAAAATGTACCAGCAAAGGATATAT
GTTGGGAATGCGGTATTGGCATCCATTCACTGAGGAAGCCATTGAACAGGTATGTTGAAT
ATGGTGTTTGGTAGTATCTTGATTTAAGGCTAAAACACAAAGTTTCTTTTCGTATTTGC
ATCTTCAAATATTTGCTTACATTTAAAGTAAACCACTACATTTTGTGTTTTTATCAAACA
GCATTTGCAAAATAATGATTGAAGTATGTGTGAACACCTGGAGTTTGCACTTTGTGAGTC
30 TTA
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 104>:

GNMCG09F gnm_104

```
35 AGGTCGGTATCCGTTTCAGAACCTGGTATTTAAGTGGCAAGACCCCAAGCCCAATTGTAA
TGTTCAAGTATGTTGGTCTGAGCAGCTGGGATAAACATGTTGGATATAGAAACGTGAGTGT
GTTTCCTGTGACACATAATCATATCTTGCTGTGGAAGCAAGTGGATTGCCGTGAAGTTAG
AGGAGATGAGTCTGGTGACGAGAAAGTTGTGGAGGAAGGGACTGGTTATGATTATGAACA
ATGGGGACTTGGGAATTTCTTGAGAGTTGGCAATTATCTGACACAGTCTTCCTTGTG
TGAAGAGGAAATGGATGTCCCTGCTCACAAGTTATATTACAAGCATCAGGTAATTTCC
40 TTTGAGATCATCTGATGGGATGTCATTCAACTTCGTGGAGTGTCTG
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 105>:

GNMCG10TRB gnm_105

GAACGACCATTATCTGGAGAATTCATGCAGCTTAAACGTGTGGCAGAAGCCAACTGCC
AACCCCATGGGGCGATTTCTGATGGTGGGATTTGAAGAACTGGCAACCGGACACGATCA
TGTGCGCTAGTCTATGGCGATATTTCCGGGCATACCCGGTACTTGGCGCGTCCATTC
5 CGAATGTCTGACCGGTGACGCCCTGTTAGCTTGGCTGCGATTGTGGCTTCCAGCTCGA
AGCGGCATTGACGCAAATTGCCGAGGAAGGCCGTGGTATTTTGGCTGTATCACCGTCAGGA
AGGTCGTAACATTGGTCTGCTGAATAAAATCCGCGCTTACGCACTGCAGGATCAAGGTTA
CGATACCGTAGAGGCTAACCCAGTTAGGCTTCGCGCTGATGAGCGCGACTTCACTCT
10 TTGCGCTGATATGTTCAAACCTCTTGGCGTCAATGAAGTCCGCTTGTAAACCAATAACCC
GAAAAAAGTCGAAATTCTGACCGAAGCAGGGATTAAATATTGTTGAACCGTACCATTGAT
TGTAGGTCGTAACCCCAATAACGAACATTATCTCGATACCAAAGCCGAGAAAATGGGCCA
TTTGTGAACAAATAACCTCTTGCATTGTGTAATTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 106>:

15 gnm_106

TCATATTCTTCAATTTCTTGCTCCTCAATGACAACGATGGTAGGCTTTACACTAGGAGAG
GGACGAAGCAAGTCTCTGAGCTTCTTCCCAAGTGAGTCTCAGCTCCATAGATTCTTCACTA
TGCAAAAGAAGTCTCTTATTTTTTGCACCAATGGTTCGAGTTCTCTTCTCTTTAACT
CGTGTAGGATCATCACCTATCTGCCCGCTTAGTCTCACTGTTCAAATTCAGGCATA
20 CCATTCAACTCTTTGCGTATTAGTGAATAACACGAGGAACCATTTATGGAGGGTGGGTTT
TCTGTTACACCGACGATGATGTGCTCAGTTGATGTTCCGTTGGTGAGCCACAACCC
TATTTATAAATATTGTAACCGGATAAGAATGGAGCTAAGCAGAAAATAAAAACAGCACA
TTCTACAGAAACCAAGTTCATAGAAACCCCAACCTGCATGTCTCCAGCATTAGCTGCCTT
CCTGGAACCCATGATTAGTTTTCCGCCAGGATCAACCCGACTGAAAGTTACTGTAGAGGT
25 GAAAAACACAGAAAACCAACAATAGTTTTAGAAAATGGTTCATGAAAATTTGATGTTAAA
ACCAGCAAATGCTTGAAGCTTTAGCTAAGACATGAATATATTAAGTACCTGTATCAC
CAGCCTGTAGCATCATGGACTGTATGCATGGAGTGACACCTTCTAAAACATACATTCTAC
TATTGTTATTGGGCCAATATCTGAACTGGAACGTCCACTCCCTACCCCTCACATCTTGA
TTTTCAAAGGAATGCTTCGGATTGACTAATCGGAGGAAAATATGCCT

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 107>:

GNMCG12F gnm_107

CCCACTTAAATTGAACTAATTATGTGTTTGCAAAAAATTAAATACCACATGCAAAAAGT
TTAGTTTTATTTTAACTTTTAAGCAATTATGAGCTACTTCTCAACTGTCCATTTAAAT
35 GACATGTTATATGTTCTTTTTTGTGCTCATAGTTATGTTATAATTGTTTTTTTATTAT
TATTATGAGATTGTATTAAGCTCAAAGAGCTAATGCTATAGTTTTTTTTTTCTTTT
TTGTCATCATTTTAAACGAGAAGTGTAGCCAATGCTATAGTTAAATATTATTTAATA
CTACACAAAAAATCAAGGTTATTCAATTCAAAAGAAAACCAATGGACAATATATGCCA
CATTTGCACCTGAGAAATGAAATACATCCATGTTTTCAAATTTACATTTAGCCCCGTAT
40 AATATTAATTACATATAGGACCAATTTTACGTAAGGTGAATCTCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 108>:

gnm_108

GTTGTCTGGCATTACAAATTAATGGTTTAGCTGTCAAATTCAAAAACATGATTTTATCC
45 ACAATGAATCTAGTAACAATCTACAACAACAAAAAGAATCTAGTACTAAAATTGGGG

TCAAAATCTATTGTTAAAACTTAATCCTCTTATTTGAAACTTCATCTTATCTTAATCCTC
TTATTGCTCTTTTAGTTGAAACAACCTCTCCACTTTTGAATTTATAAATAAATTTTGCA
AGCTTCACATGGAGTATAGTGTGATAACCATATAAAGTCACATGCGGCTAGACTTGAGAG
TCGACACATATGTTTATGTGCAATGTATTGGTTGGGCTTCTTAATTATGAAACAAATGGG
5 CTTTGCAATAACAAGTTAAGTTTCTCGATCAAGCTAAGCAATATCTCAGCTCGTGTGTG
ATTGTTTCTTTTCTTGGTCAATTCCATCAAGCTATATTCTTCTAGTCACGTTTCGTAC
CGTTGCCTCTATCCGAATCCATGCAACCTCCCCAACCATATATAACAGATAAGAGATTTG
CACAAATGACAGCGAAATGTGCTAAACTCGTCTGGCGTTTCTTAAGAAGACGACATTATT
GTGTGAATTGGAAGAAGCGTGATTAGGGAAACTTGACGTGGACTTTTTGGGCTATTGACA
10 AATAATAACCAACTTTGGCCCAAACCTGTTTCGTATTAATTTGTGGTTCATTTGTTTTCTA
GTTGCATCTTTTCTTAGCCTTTGTCCCTCGGTTTAGCCGCTGTGAGGTCGGGACCGTTG
TTAATTATTGTAACCCGCATAATTACATAATAATAAACTCGCAAAATAAAAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 109>:

15 **gnm_109**

TGAACACGTAAGTCTACAAGTTCTAATTTAAAATCACAGTTTTTCTTTTTATATTTAGA
AATTTTTACGGACGGAGATGGCTGTGGAATGTGGATGTACATAATCTATAATTTATTTT
ACAGTTCTCCAATAACATTAGGTGAAATTTTTCCCGAAATTTTCTGACTTCGTGAAAAT
TGGACAAAAAAGTCCATAAACCGTTAATTTTCGTGTTGTGATATAGATTTGTGGGTCGTA
20 AATAACTAGCAAAATCCAACAAAACCTTTGTTTTCTTGTGCTTTTTTCTCTTAGATT
TTTTTGTGTGTGCTAATTTTACATATGCATGCCCTACAGATAATTCCTATTTATGCATC
TACAGAACTCAATTATCGTCTCAGTGATAATAATGCAGTAACTGTAAGAAACGGACGTA
TCAATTTCTTTCTGACAGATTGAAAGTTGTCTTAGAGAAATCGGTACTTATATAATGA
GCATATCATTTTCTCAGCGTGAAATCAGAAATGAACATTTATGATTTTACCCACTATATA
25 TTAAGAGTAGGTTAGGAGAAAATTGATCCTACGTGGTACGTATTAGCTAAGACCAATT
CAAAAATATGAAATTCCTCTAATTTATCATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 110>:

gnm_110

30 GGATGTACGATTAGAGAGAAGTAGGACCATGGAAGTTAGGGAAGTAGGAACATGTCATAG
ATAAGGCCCAACCCAAATATGTGGTCTGCTTCATCTTAGAACCTCGTGGTGTGTTGGCTT
AGCTACGTCGTCAAATCATCCATCAGAATCCAGTTTCAGTTTTGTCTTCCAATCATGTTT
ATACACGTGTTCTTATCGTCTTTAAAGATATCTCAGTCTCTTACATTGCCTAGTTGCCC
TAATAATTTTCTGCCGGTGCGACTAGTTTTATAAGACTATTTGTAGTTTGAATGTGAAGA
35 TTCACAAATGGGTCTTCATAAAAAGTTAAAAACCCCTTACCAGTTTTCGTGATTTTCTA
TTTTGATGTAAGTTTCTGTGAATCGATGTGATAATATGTCATGTGAGTCTTTTTTCTCCG
GCTGACATAGTAACATGTGATTTGATAAGAAAATTATTTTAGTATCGTGATAAATTTGT
GAGGTGTTTAACTTTTTGTTTAAATCTTAATGCAAAAACCTTCAAACCCCTAGATTTCTTT
TTTGTAAATTGGTTTTGCATCAAAACACAATATCCGAATGTAAATATTGAATTAGCTAAA
40 CAGTAGATGTCCACTAGATCATGAGTAGGCGATACATATAAATTTCAATTAATTCAGAG
AGAATAATAATTAAATTTTGTAAAAAGGTGCTAAGGCAAGGTCTTAATACAAGTCTAAAT
TATTGAGATGAAAAATTCATGTTAGGAAATAGGTTGGACCATAAGAGGATGGTGCTATCA
ATCTATTAAACAAAAGTACAAATACCCTGAGCTGTACTGCCGG

45 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 111>:

GNMCG15F gnm_111

CCCTGCTCTTCCGTTCCATGTTTCTGCACTTTTTGTCCATCCCCATTCCCACATTGTCAC
CGGTGCTGGTAACCTCCCTTCTCTGTGAATCATACGTTGCTAATAATTCTTCTACACTCCC
GAGCGGAACCTAACGACTGCCCAACCAGAAAAGAAAAGAAATTAGAAGTGAAGATAACAGAT
5 TCTTTTGTGGAGCTTTAACTAGATGTAAAGATGAAAAGTGTGTTACCTGTCGAGCTTCA
AGGTTTGAGACAGCCATAGCACCAACGTATGGAAGACTTTCACAACAGCATCTGCCAAG
TCAGATATAAACATAGGTTCTGTTCCCTAGAGCAGGTACTCGCCCCAGTTTTTGATACCA
GACTTCAAAGCCAACCTTTTATACTCAACATCTATCTCTCCAGAGTTTTCAATGTGCTCG
10 CATCACAACCTGTTAAATAGAAACAAACGTGAGTTTCAAATAACCAAGAGAGAGAGAAT
TTGTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 112>:

gnm_112

TTAAAAAGGGTAAGTGGATCCTGACCCTGTATATGCTGAATGAACTTTGTCATTTTCTGT
15 TAAATTAATTTTCGCTGATGCCATCTATGCTTTGATGATGACGCAGTTAGAAAACAGCAAC
CTAAGCAAAGAAATCCAGTATTCAATCGTCTTGTAAGTTCTTAACATCTTCTATCGATT
TGGGGATTATTTAATTTGTCATTTCAAGACTGATTTTCTCTCCAAGCCCTCACTTATTTT
GTCTTGTGTACAGTTGAAGGAGGCTGCTAGCTTCTAACATCCGGATTGATATCCCAGG
AAATGAACCGATGTATGAATTACATAGTCATGTATCTTAGGATTGTAAACATCTCCAGGT
20 TTATATTTCCAGACTTCTCAATTATTAAAGCTTTTCACCTCTAGTTCAAGATTCCAACAT
CGGAGATCGAGTTTCAAGGAGCTTCAGTACATACGTGATGGGGACAGCAATGGGGTGCTG
CACTTTGTGGGTACATCTTATGGTAGTCATCAGTGGGTCAACCCCGTTTCTCGCAAAGGTT
AACCTCACTTTTATCTTACTTTCTTTATTCATATTGTTGAAAATCCAATTACCATGACAA
GGAATTCGTCTGGAGAAAAATATTTCTTATTTGAGTTCCTTATGTTTTACAGAAAATCA
25 ACATTACATCGAGTAGTCCACATCCAGATTCAGTATCCAAAGGCTTTGGCTTCAAAG
CCTATGCGGTATGCTCCACCAAGTTCGCTCGGATTATATGACTAGAATTTGGCTTGAAC
TACAAAATTGACGAAGCATAAAATTAATTGAAGTGAACCTTCTTTCTCTTAGATACAGT
ATTTAACCATATGATTTCAATTTTTTTGGCACCAGGGTACTTCTTTGCAGGGCCTAGGAT
GGAAGACGGCCATATATCATCCTGGTGGTGGTGGACTTAGCGGAAGAACATCAGGTCTC
30 CTCCATAACTTCTCTTTCTACATACTCTGTCTCATAAAGACACAAACGGTCTAAATGCT
CCATATGTAACCCATACTCGCAGAAATAAGAGAAAATGTATTGAGTAAACAAACATTTA
CTTTAAGTTCTGAAAATAATATAACACGGTGAGGATTCTTGTTGCAGCTTATGTGCAAC
TATTACACCTTCAGAC

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 113>:

gnm_113

ACATTACCAATGGAAGCTAATGTTGGTTTTTAAATACTCGAACCATATTATCTAGAGT
CTTCTAGACTATTCTATCACTTAACAAACATGCAGTTTGATTACGAGTTTTCTCGTTAC
GGATTAGTGATGAGCTAGTAAATGATTATTGATTGACAAAACCTTATAATATGGTTAATG
40 TTTCCATCTACCATTTACGAAAAAGGTAACAAATTTTTGTCACTAATCTTTCGATAAAC
ACAAGTATGCAATTTTATTTTATTTTCTCTACATATGCTAAGAATCTTAATT
AAAACAATAAGACCTTACACTAGTTTGTATTATTAGAATACTTATCCACATCCCTTACT
TTCAGTACAAATGTCATCTTCATTCTTCCCTAGACATTATTTAAGAAATATTTACGAAAT
TTTACGAAATCAAATTAATAATTGTCATTGAGACATTTAAAGTTTATCACTAACTAAT
45 TCCCTAATTAGGGATAAATTTTCATTTCTTATGACATACAAACAGAAACGTGAAACACGT
AGGCCCTCTTTGTTAACCTCCTCACATTAATAATTTGTCGTAAACATCCTCACATTAACA
CTTCGTGAATGTTTAGTTCTAAAGAGAAGAAAACTTTAAATATGTTTAGCATATATTTA
GTTAACTTTGTTCTATGAAATTTAAAGTAATCTTTATGTCTTATGACATTTAAAGTTT
ATCACTAAATATAAGCGATTTGATCTAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 114>:

gmm_114

```
5 TCATTGTGACTAGCCAAGTAGCCATGCTGGACACTACCAAAGTGGTCTGAGCCAAGACTT
TCTACCTTTTGTCTTTTCTAGTCTAGACAAAACCTTGCAAATAAAGTATATTAGTAGGC
TGAAATTTTCCTTGTTTCATTTATTTTCATCTTACACAACTAAAAAAAATAAAAAA
ATAAAAAATAAATAAAAAAATTAGGAGGTTTAGTAAATAAAACGGACAATGAAAAAAAC
ACAGAAGAGAATGATTTATATATGTTAATAGTACTAAGGAACCTTTGGATCCAACAGGAAA
ACGTAAACTGTGGAACACCACGATCAAGTACTAAGGGGTTAATCCTTTTGACTCCTCAA
10 GCGCACCATGAACACTTTGATGGAAACAATAAGCAACTCAAGAGATTAGAAGATGGGAAA
GTTTTATCACTATATCAATGTATATTTGTTACCAACTCACATAGTTAAGCAATCCGAAGA
TTGTGCGACGGAAGTGATGGGCCACACGAAGGATCAATGAACACTTGCATGAGACGATG
GCACAATCTCACTGTTCCGAATATCAGCATGATCATCTACCATCTTTAAAATCTAGGATT
TGCTTAAGTGATTTTTCTTTCTTAACACTTCGCCAAATGGATCTATAGATCTAAGGTT
15 TCTTCTTCTTCTCCAAGGATTATATGTGGGTTTTAGTACTTCTCAAGTTATCTCGAATC
TGTTTAGTTTTACTAACTTACTATTTTACTAGCAAGGAAAAGTCCAATAATACGACTTGT
GTAGCCAAAAAACAACGACTTGTGTAATCTGGAAATGACGATAATACCCCTCGTAA
AACCTAAAACGTGTGAGGAGAGAAGAAGGTGCCCTTTTGTCCCAGCAAGAATAAATCAG
TCGGCCTTCTTTGCCCTTCTCCTTTGTCCAGATTTTCTTCTCAACCTCTTCTCTTGC
20 TTACCCGCCAAATTCCTTATCTTTGAAATTGCCTCATCCCTTTCGCGTTTGGTGATTCTG
AAGATTCCGCTTCATATCCTTTTGATCTGTAAGTTTCGATTTCCGATCTCCTTCGTTTGT
TTCTGTCAAATTTGGTTAGAAATGTTCCGAGCATTGAATTTTCTCGTACATGATCTCT
GTTTTAATCTGTGTTGTTTGTATCAAGTTGTGAAATTCGAATTGGGTTTTGGTGGCTC
AAGGGTGTTTTGTTTCGTTAGCTAAATCCCCAACAGAGAGCTTTCAATTTACAGAGATGGTG
25 GTAGTTGTAACACTTAGGCTAAAACATTAATCTCTGCTCTTAAGTGTGTTGGTTTGGAT
TTTTGTAGAAACAATGATTGGAGCATAAGTTTTATAGAAGAATGCTTCCAAGTTAGTT
GCTTTTGTGCTATATCTTGAGGGCTTATGGTTATACAACCTATAGCTCTTTATTTGTTT
TTTGTCTCACTTTTCTGTCAAGGTCTTATGTTAGTGTTCATACTTTGTTTCTTCTTA
CAGGTCTATAAAGACACTACTGGTTGAATTAGAATCTGTAAGAGATATTAGTGTTTT
30
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 115>:

gmm_115

```
35 AGCGATGAAGGCACTACTCTTTTGGCCATCTAACTATCTAAATAGGCCTAGTCGAGGATA
AACCTTTGGTTCTTTTCGTTAGTTAATAGGCCTAGGATTTGTCTTGTTACTAATTAAATGT
TGTATAAATAATGTATACATATATATATATATGTTTCTTTATAGTTTCACGCTGAGACATG
AACATTAAGTGAACAACCTTTAAACCTTGAATATAATTGAGCTTGTTATACGTGTCAGTT
TCTTATTACATCAACTGAATTTATTTATCACTGAGACATTTATGACTCCAGTCATAAAT
AGTGCGTATATGTATAATTGTGTAAGGATGTAAGGATGTAAGGATGTAAGGATGTAAGGAT
40 AGGTAATATGTGTAGAAATGCTAAAATGAAAACAAAGTACAAAAAATCAGAACTTTCATT
GGTGTGGCATAGTGGTTACTGGCTCGGATCTACTAGGACGAGTACGATTTCCGCCACGTT
ACAGATCTAATATCACCACCAAAATTAACAGATTGTTGGAGTTTGTCCAATTTTCAAGA
AGTAGATTCAAACAATACTTTCAGAAACGGAACAAAAGATCTAAACGATATTGGAAAAGT
CTACTGTTGTAACCTTCTCAGAGACCATCCCCATCTCCGTCAGTAGAAGAAATCC
45 AAAATAATAAATAAATAAATAAATAAATAAATAAATAAATAAATAAATAAATAAATAAATAA
ATACTGCAGTGAATAGTAGATTAACTATGTTAGAATTTGGATGATTCTACATAAAACCC
CAAAGACTAGTAAATTAGTCATGACGCATTAGTGGAGAACATTTTCTACATTTAGGAAA
GATCGAAATACCACCATTTT
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 116>:

GNMCG19F gnm_116

CTGTTATCGTTGCGGGTATTTCTCAATCTCTCTAATTCCTATTCTAAACTCCAAATTC
GTTTGATTTTGGACTAAAGTCTCGATCTTTTCGTGACCCTCTTCTTGATTCTCTGTTAG
CTCTTAGTTTGTTCATGTTCTGTTTTTTGACTACGTATATGGTTTCTTAGTGCGAATCT
5 TGACTCTTTTAATCTATAAATAGGGAAAAAATATGTGACTTTGGTACATAAAAGGGAAAA
AATTGAGACTTTGGTTGTAATGATTTTGTATAGATCTGCGTATGAGAGTTCTCTATTCT
GTGAACAATTTATAAGGACCAATCTGGTTGGAGGGAATGCTATTGTGTAGCAAGGTGC
GTTTTTTGAACTGTGTGAATATGTTTGTCTATATATAGAGTTTAGTGGTGATGT
TTTGTGTGCTGATTGAGAATCTGTGAAGACAGAGACTACATTGTGG

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 117>:

GNMCG20F gnm_117

ATCCCCCATCTTCATCAGCTCACTTCTCAACGCTTCGCTCTTCTCCGCTAACGTATATCA
GCTTGCAGTTGGCTACGTGTCTTTAAAGCTTCAGGGAGAACAACACTACTGCTCTTCTCT
15 TGTTCTGCGACTCCACTTCTTAGCTTTAACTGATCGTAGTAAAGAGCGTGAAGAACAATG
TTTACTGGTAATCTCTTGTTCTGTGAAGCGTGAAGACGTGCGTCTGAAGAAAGCTTTAAG
GGATCCATTGAGCTACACACTTTTCCCTTTCGATCTCGTCTAGATTCCGATGAGCTTTC
AAGAAGATGCTATAGCTCTGTAGAGATCGTCTGATTTTCTAGCGGATTTCCGGGACA
AGATTCCGCAATCGCGTTGAATTTGGAGATTGTTAGGTCTCCGTAAGTAGCGATCTCCGCT
20 AAGTAAGAATCAACTGTTTTAGCTACTCTTGTAGTGAAACAGAGCAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 118>:

gnm_118

TTTTTTTTTTTTGGGTGAATTTTTTTTTTTGTTTCAATTTAATTTATCGATGTGAAAAAT
25 TAAACTTTTTATGGGTGAGATAGAGAGAGAGAGAGCATTCAAGTGAACGAAA
CGCATAAAATGCATGCACGACACTTGAAGACACACACAAAACCTCGAAAAGTAAGAAACT
CGCAGAGATTTAGAACAGACACAAAGTGAAAGACTTTGGTTTTTTTTGACTTTGTTAAG
ATATGTTTTTTGGTATATAATATATATAGAAATGAAATTTAGGGTTGGTAGGAATCATA
TATTTTGGAAAAAAATAGTATGGTGACGTAATTTAATATTTGGTTATATGTATTCAAC
30 TAATTTATAGGTATTTTCTTTCTACAGTTGGGGTATTATTTATATAAGGAAATATTGAT
TATTTTATCAAGAAAAGAAAGAATTATTCAATAGAAACATATATGTTTCTTTTGCAAT
CATAAATATATAGAGTGCATGCATGACACTAACACACACATGCACAAAAGACTTTGAGGT
TCTTCTTTTTCTTTTTGACTTTTCTGGTTTTGTTATTGTCAATTACTCTAAGAAATCATT
TTAATTTAAGTTGTAAAAGTTATAAAAATTATCCTAAGAAAAGAAAATAATAGTACATA
35 AATTCTACTTATCTAATTAAGATTATAATAGAAATTTGCGATCGCGTACATGTATATGC
TATATACTCTACCTGTCGTCATTCTCTGTATATGTATTCTAACCAAATTTGAGTTCCGAA
TACCCTAAAACCTAGAGTGGATTGAGACCGATAGATAAGTAAAATTTGACGATTCATATC
AAACATGTAGTCTTATGGTAGAATATATATTCCAAAATAAGATACCAAATTTATAGAGAA
CTTGCAAACGAAATGGGAAGAATTGGTGAATATAAACTAAAATTCATTCTTGCTTAAA
40 TTGAATTTTTTTTCCCTACACTGAAGAAAACAAAATTAGTtAtACCATCGACAAAAGA
AATATGCAAAAATCAACACAATATATTTTGTAGGATTTGTTATTTTTTGTTAATACTT
TTGAAGGATTTGTAGTTAATTGAATATATATATATATATAATATATTATGTTTTTTTT
TTTGCCATTTTACTACATTTAACCATAACCTTGCTATTTATGGAGTCCAATAGTCCATGC
GCATGATAAACATACAGTATAAGTGTTCACACGATTTTATATATGCATGTGATTTTCTGT
45 CAAATAACACGTTACTACCCAAGAATATATCATCTATTTGTTCTAACTTTTACTCATGCA
TGCTCTATTCACCTTCGTATTTCCCATTAATCTTTAATCTTTTCTATCTAATTAGTTCAA
ATTTAAATCTAACTAAAATGACACCATATCTTTTGGAAATCGCTCTCTTTTGGGTGGAATC
TTCTATATTATCAACGAGCTACTATTAAGTTACTACGTTTTTTTCACTCCCTTTTTTGACC
TTATATATAGCTAGGCTTGTAACACCTATCGAGTAATTGACTACTGTTGGAACGAGTAAA

AAACTTATAAGTTTAACTCAGTGTAATGTGCGCGTCTGGGTAAAAAGAGTGGTAATC
TATGTATTAACTAAATTTTATTATACACTTATGGAATTTTCTTGTGACAGCAAAATAT
ATAGAATAATCCATTTT

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 119>:

gum_119

TTGTCCAACCTATCTACTATACTTATGTGAAAAATACATACATATGCCCAAAATTGTTATC
AAACCAAAATGTTCTGGAAATAGCCATTGGACATCTATTTATAAAATTGCATACACTTT
AGCTAAAAAAAAGTACTTCAGTTTGTGTTAGAATATTCAAATTCAGAATTATTTTGA
10 AAGAATTGTGTGCAGAAATCAAAGAAATTTGAAATAATTCAGAATTGTGTACACAATA
TCAAAAAATCCATTCGAAAATGCTTGTACACTTGTGTTTGGCTTGTATTTTATTTT
AAAAGTATGATATGTAAATAAATAGGAAGTGTAGGATTATCTTTTCTGTCTAATAA
AAAATAAAAATAATCATATGCATTTATGAAGATAATTAACTTTTAAATACTTTTAAAT
ATTTCATACATATTATCCATTTCTCATTCAAAAAAGAGTTTAATTCAGTTTCAGAA
15 TAAATGTGGGCCTTATACAGATTTAGTTGGCCATTAAATGTACAGGTGACAATAATCCA
CCAACTCGTTTCTCCTGACACAAAAATATCTCATCATGTCTTCTTCTCGTATTCGTGT
CTCTCATTTCTTTTTGACTCTTCTTCCAAAAAGGATTAGATCTGACTCACTATTACG
TGTCACGCACAGTTCATTAGGTACGCTCGGAAATTTATCCACACATCTAAATATCTGA
TTTATGATCAAATCACCCATTTTATTTTCTTTTGTAGCTTCTCAAATCTTTGTCTCT
20 TAATCGATTTAAAA

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 120>:

GNMCG24R gum_120

CAGTCAGGTTACTAATAAACTTTTATTATCCCTTCTTTGTTATATTACTAATAGACCAAA
25 AACATTTCAGATACTCAGTGCCGATGTAGAGCCTAAGAAGAAGCTAAAGCACATTGTCTAT
GGCGGCTACAAGGTGAGTCTAAAAACAAGTGTCTCTTAAATGATTCTTCCCAAAATGA
TTGTTTGTCTTGGTTAATATATAGGGAACAGAGGTTTGAGAGGGTGACTAAAAATCTA
AAAGTGGCAAGAGTGTAAACACATTGGTAGAGGAAATGAAAGCAATGGGGATCGCATCT
30 GTTGATGACTCAGAGTGTACAGAAGTTATGGCTCCAGTTGCACACAAGGACCGAAGCCCG
GTTCTACTTCTTATGGGAGGTGGTATGGGTGCAGGAAAGAGCACTGTGCTTAAAGACATT
CTCAAAGAGTAAGTAAAGTATCAACATATCTGTCATTAATCAGTGTCTTATGCATTGAA

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 121>:

GNMCG25R gum_121

ATATAAGAGTTAATCTTATAAATAGTTTCTGAACTTAATATACTATAACAATGTAAAA
35 GTCGTCGCTTTGTTATTTGAAGTGAATTAAGCAATGTTATGATATTTTACTAATTAA
CTCAATATGAAAAACAAAAATCCTCTTAACATAAACAGAACATAAAAGACGACTTAGTT
TTTGCTTTAGATCTAGACTCATAACTCAAAAAACAATTTTATTATAAACTTTTGTAGATC
TTACAATTTTAAAAATAAATGTACATTAATGTTGAAAAGCAAAATCTTAAATAGTGTAT
40 ACTACTACTTTTTTTTTATCACCGTGATAGATCATTAGATCCTTAACCTCAATCCCTAGA
GCCTGCTTATGCTTTAAGCATTGTGCAATCACTACCAACACACTCAAACTAAATAA
ATATAATTTATAACTTATCAATAAAATAAATAC

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 122>:

-637-

gnm_122

CCTCGAATTGTTTTATTTTTTCATTAATCAGACCAGACACAGTTGGGATAAAATGAAAG
 GGGCTTGAGGAGTGAGGACGGAGAACCACACGTGTCCACACAGTTGTGATAATTTTTTTA
 TTCAACAATAAAATTGCAAGAGACGAGTTTGGTAAGTAAATCCGGTTGAACCGGTCCGAC
 5 CGGTATTGACCGAAACATACAATCTTTTATAGTCTTCACACATTGTTCCCAACTTTAAAC
 TTAGAAACCTTAGATGTTGTATTCAATAATTGTCAAACCACAAGTACTGACAGATACAGA
 TTTAAAACATTTTTGTTTTGATCAATTTACTAGATCTGTTCAATCACCTGAAAACAAGT
 CTCTACAGAGTTCTCCATAAAATCTTGAGACAAGTTCAATGAAGACAGGACTCTTAAGAT
 TCTTCCAACAGAAGAGAAGTTCTCTATGTCCATTAAAGTCATCTATTTCCCTTCTTCAA
 10 CAATCAGATGAATCAGATAGTTTTCAAAGCTTCTACAAGCATCTCCACAGCATTGTCTT
 CAAATGTATCTCTTGCCTTCAGCGATTTCCTGGTCCGTGAAGAGTAAGGTGTCGTGATGG
 GTGAAGTGAAGAGCTTCTTGGCTGTTGCTGGCGTAAGAGGTGATTGCATAAACTTGGAGT
 AATCATCATCGTTTCACACTAACTGCAATGGCAAAATAAGAGAACAAGAGATCAAGAAGC
 TGATAAAATTTCAATGTTAAACAGATTTTGTAGCGAAGTTGTCTTACAAGAGGAAGTTC
 15 TATGTTTGGCGTTGCTCATCTTAAGGTTCTTGCTTGAATTGAGGAAACAGAGACAAGAAC
 AG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 123>:

gnm_123

CCAGTGATCTTATTTTATTATGGTGAAAGTTGGAACCTCTCACGTGCCGATCAACGTCTC
 ATTTTCGCCAAAAGTTGGCCAGGGCTTCCCGGTATCAACAGGGACACCAGGATTTATTT
 ATTCTGCGAAGTGATCTTCCGTACAGGTATTTATTCGCGATAAGCTCATGGAGCGGCGT
 AACCGTCGCACAGGAAGGACAGAGAAAGCGCGGATCTGGGAAGTGACGGACAGAACGGTC
 AGGACCTGGATTGGGGAAGCGGTTGCCGCCGCTGCTGCTGACGGTGTGACGTTCTCTGTT
 25 CCGGTACACCACATACGTTCCGCCATTCTTATGCGATGCACATGCTGTATGCCGGTATA
 CCGCTGAAAGTTCTGCAAAGCCTGATGGGACATAAGTCCATCAGTTCAACGGAAGTCTAC
 ACGAAGGTTTTTGCGCTGGATGTGGCTGCCCGGCACCGGGTGCAGTTTGCATGCCGGAG
 TCTGATGCGGTTGCGATGCTGAAACAATTATCCTGAGAATAAATGCCTTGGCCTTTATAT
 GGAATGTGGAAGTGAAGTGGATATGCTGTTTTGTCTGTCAAACAGAGAAGCTGGCTGTT
 30 ATCCACTGAGAAGCGAAGCAACAGTCCGGGAAATCTCCCATTTATCGTAGAGATCCGCAT
 TATTAATCTCAGGAGCCTGTGTAGCGTTTATAGGAAGTAGTGTTCTGTGATGCCTGC
 AAGCGGTAACGAAAACGATTTGAATATGCCTTCAGGAACAATAGAAATCTTCGTGCGGTG
 TTACGTTGAAGTGGAGCGAATTATGTGACGAATGGACAGAACACCTAATGAACACAGAA
 CCATGATGTGGTCTGTCTTTTACAGCCAGTAGTGCTCGCCGAGTCGAGCGACAGGGCG
 35 AACTCGMAGTgAGCGAGGAAGCACCAGGGAACAGCACTTATATATTCTGCTTACACACGA
 TGCCTGAAAAAACTTCCCTTGGGGTaTCCACTTATCCAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 124>:

GNMCG27R gnm_124

CAGTAGAGGCCATACCAATTATCGGCCTTGCTATAATGGATTGGTGGAAGGAGTCCGAT
 AATCTAAGTTGCATCTAATAAATTCAAACCTTGGCAGCGAGCCAAGTTGCATTGAACCTCA
 AACATTATGCTATTCATTCTTTACTTAACTTTTGTCTGAGAAATTGTTGTTTTATG
 TAAGTTGGTCGCCTTTATTACAAAAGATTTTGTCTTACTTGATAGTTACTATCTATTGA
 AATGAAACAAGTTCTTATATCACTTTTATGCAGTTTGTAGGAAATGCATTATGAGAAAA
 45 TCACAGAGGATGAGATAGAGAGCTGTCCAGTATGCGATATTGACCTCGGGGGGTACCCAA
 CTGGAGAAACTAAGTAAGTTCTTCTTCTTTATTCCTTACACAATTTCTCCTCGGT
 CTTGTTTAGCAGTGATTCTTGTATAGACTGTTAGAAGCCTTTTGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 125>:

gmm_125

```
5 TAATTGGAACGCGGCCAAGAAAGTGAACACGCTTTCTACACGTCTTAACTCCACAG
CTACTTATGACTCACCTGCTTATTTTAACTCCTCAAAGTCTTTCCTTTTTTACAATT
TTTTCAAAGACTCAATAATTGTGGTATGATATGGAAGAGAGCATTAAATGGCGTATCTTC
AACGCCAAGATTTTGCATGTGGCTCTATCGTGATTGAGTTTTGATCCATCTCTCTAGG
TATAGAAAGAGAAAGAGATCAAACCAACCTTTAACAACTTATGGACGTAACATATCAC
10 TTACAAGCCAAGTCAATGATGAAGAAAACATAGACTGATGATGTGAAGAAAAAAGG
TAGATAACTTGTGGGATTCTTGATGTTAAGTTTAGAGAAACAAAGTTGAGTCACTTCTCT
CTTTCTATGTATTCATCAATCTACAACGAGTAAATTAGCAACAACAAAAGGAACAGAAC
AAAACAAAGATCAGAGGGTCTTTGTGTATCAATAGCTCTCATTGTTTTATTGCGAAAAG
ATTGGAACATCGCACGCTGGTTTGAGACCATTATCACATCACTCTGCTTCACACTCTCG
CACGCAATAACAATTGGTATATGAACCTTAAATCCCAACCAATCAACACTCAGTTTCCCT
15 CTCAAGAACACATCAACCAAAGCTTCAAGCGTCTTCTCTTTGTTGTGTCAGCAATGTAGCA
TCAACATCATACACTTTGGATTTTCTGAGTCTTGTGAGGATCTTCAAGGAGGTAAACATT
CCCGGGTCTGCTTGAATCCAGAAAGTGTCTTCTTCCGAGGTTTATGTTCTCAGAAGAT
ATATCAGCTTTCATAGGACTGTAATATAGCACCGTCTTGTCTATTATTAGAGAGCTGA
AGCACCGTGTCAAGTTCGCATTTCATCAGAAGATCTGTGATGATTGGCGATATCCAAT
20 CTCGAGAACTTGAGGTTTGTGACAAGCACCTGAGGTAGTATAGATTTGATTGAAGAGTTT
GCAGACAATCCTACCAACAAGACGATTATAAGGACAACAGAAACAAACATGCAGGTGCAA
GCGCAGCATTTTCTGAAACATCCAGAGGCGCATATTCTCTTGTCTCTGACCGATATGA
TCCACAAAGGAACCCGATTTTCTACTCCGATCGGCTCTTCTCTCTCGAAAGCCAGAC
AGTCTCGACGCAAGGAGGCGCTTAAAGACGAAGCCTTTTTCGGGTTTTCAACATCA
25 TCAACCTGTTTCGAGAAATGGAAGGGCTTGAGAATCTTGAACCTCAGATCAAAGAACCT
TTGCCATAGCTACTATCTTCCGG
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 126>:

gmm_126

```
30 TATTTTTCCCCATAATTTAATTCATGAACTGACTTGGATAGTCCGAACCACTAGATTA
GATTCGCATCATACAAGTACAACCTGGATTATAAACTGAAATAGAAATCAACTATAAAA
TTCAAAGCACGTAATGAACCTTCTTCTTTTACCTATTGTGTTTCCATATAATTCCACA
AATGACATTTTTTAACTGGTAGTGAGGATAATAGGATATGATGATTCTCAAATTTGAAAT
ATTGTATATTGGTTGTAAAAACATTCCGATAAGTCACAAACATATAAATCAGCATAAC
35 CTTGGAAAAAATTACGTTTGAATCTAGACTAATACATCCAATCCAATGATTAGTTTGA
ACTACATGCATAATTGCATACTAAATAATGATCAAGTATACTAAATCTGGAGTTTGATA
TGATTAAGCGMAKsTTAATGTTTCCGGCCATGTGAACCTCGTCTTAGAATAGTTGTCATC
ACGCGATGTTGGCTAACGTAACAAGAATCATCAATCTCGTACCACACATGTTGCACATGA
GAAACAAACAGCCGAATATTCTTGATTACCTTTCTTCTTTTCTCTTTTAAACAAAAAC
40 ATAAGCTGCAATATTCTTAATTCACACTCGGGACCAAAACATGTTAAAGAGTTATTGTTT
TGTCATTGGTATTCAAACCTCGTGATCTTGAAGATTTTTTTTTTCTCTGGTCACACATCA
TAATCATGTTATTTTCTAATATTTATGTATACTTAGAAATAAATAATATAGTTAGGATAT
TTTTTAAGTAATTAATTAACATGCAAAGGATTTGTAGGACGCGCATGTAAGAAACAGAAT
CAACTGATAGAACTGCAATAATGCCTGATACACACACAGCTGTAATTGGGGCTCAGG
45 TTCCCAGCTGCAATAGACATTTTTTGTATTCTTATTCATAAAATATATAATTACAAT
ACTAATATCATGGCATCTCATTACCCCTCATATAATTAAGTATAAAAAACAATAAAGT
ATACCACATTTCTAAAAGAAAAGTACGCATTATGAACCTTTATTAACCTCAAATATCGAGTA
TCAGAGTAAAAATATGTATATATAAGCCATATAGGCTTTTGTGAAAATCAACGGCATGT
GTTAATGTTACGAATGAATTTGGAATCTTTAAAGGGAAAAAACAATAATGAAC
50 TCACTATGCAAAAAACCATGTCTACCTAAATTTGGTCACAAACATGTTTACGTGATTAT
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ATTTGCCTTCATGAAGTATAGACCAACAAGACGTCTCAAATAGTAAAGACAGAACGTGG
 GTAAGTGACAAACACGGTTGCATGTAAAAGGTAGGTACAAACGCTATATCGACAACCAGA
 TATGGTTGGTGTATATCTGTGTAACCTAGTGGTGCATGCTCAATGAAAGATATAACCA
 5 AAAATAACACTTTTTCTTATGCTTAAGAAACATATCAGATTTGGTGATAACTTGAAC
 AAAGACCCAGATATGGATATGAATTTCTTACCTAAGTTTTAAAGAGTCAAGAAGCAAT
 GCCTTGTTAAACAAACGAGCTGAAGTGTGCGTCTTCCAGCATTATCATTGTGGAAC
 GGGTCTCTACTTGTCTTTCTCCTGATTCTGTCTCAAGATTCATATGTTAGCTTTTGTGTA
 ATAATTTCTAGGTAATAAACAAATTATCTTAGCAAACAGAAATTAATTTACCTCTGTTTCT
 TTGGTGACGAGCTTCCATGACCTCCTTGTGGGGTTACATCTAACAACTTAAGAAATT
 10 TTTATGTGTCAAGTGAACATATTGTAAGAGATGTTAGTGAAGAACACAAAGAGTGTGTG
 ACAATGTTACCGTACATACTCATTTTCGTCTGAGAGGCTCTTGCAATGGATGATGAGG
 TCTCATCTCCCTGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 127>:

15 **gnm_127**

CCCTGCCTTTGCGAACTTGGATAATCGATATTCCTTTTTAAAGATGTGATCTTCGAGT
 TGGTGAATCTGAAATACAGAAAAACCAAGGAATTAGCAAATAAATAGGCAAAACCCAGT
 AATTCCAACAAATATGTAGATAAATCACAATATTTCTCCAACCTTCAAACACCAACAACA
 20 GAGGAACTAAGAGATACTGAAAGAAAGTGAACAAAACCTTAAGAGATATGATTTAGAAC
 TTCCAAAAGAATGATATGAAACACTGAGTCAATGAACCTCCAAAGACATACGCTTAGAC
 TATAATTATTTTATGAATACAACCTAACAAGGTCAAATGAAAATTCTTTGATAAAAGCATA
 TATGCGTGTAGCTGTTATTCCTAATTTAGTTGAGATAAACCACCTCTAATGTTGGACC
 TCCAGGTGCTTTCCAGGTAATCCCTAAAACGCAGAAGACTTTTAATGTCAAAGGCACAG
 TATCACCATCATAAAGTGACGAAATAAGAGAGTTGAAGACTACCTCTTCTTTTCTCTAT
 25 GGTGTTCTGTAGAAGAGCGACTCTCAGTGCAATCATTGCAATATTTAGGAAATCAGGGT
 TCAAACCTCTCCTTTTGGCATGGCTGTTCCGCCCTCCAGTAAAAACTATCTTCCCCGTCAT
 CAAGAAAGGCGGGCTTAGCTGGTTAAGGAAGGACAAGAAATCAAATTCATACATCTTTTT
 ACTTGATCTCGTGAGGAAAGAAAGAACAGGTGCACATATCTTATATCAGAAAAGATTCC
 CTATAGTTTATATCACACCACATGAAATTGTGTAATATTCACTAAGAAGTGACATGCTAC
 30 TTTGATCAAGTCATGTTTTCCATAAATTTGAGAAGGTAGTGGGTGCATAGATGGTGATT
 TGTGAATGAAAAGAAAATAAACCTTTGCATAAGACATTACCATTCCATTTCATCGTCAGA
 GAACTGCTGTTGTTGAAATCTGCACGTACAGAAAGTAATTTCTAGAGTCGCTATATTG
 TTTGTGCAAGTGATCACTGAAAGTTTGACGTTTTGCTTTCTGCCCCCATCTTAGCATG
 TATGCCAATTGGAGACCTATAAAGGCTGTATCTTGAACATTTTGCTACTTTGAATCAT
 35 TGTGTCCTGTAAGAGGGAGATGAAAATATCCGGTCAGGAAAAAGAGTTAGAAATGAATG
 GAAGACAGCTAAAAGATAAGATGACGAGACTTTGTTACCACTTCGTTCTCAAAGTCGTTG
 AGCCTTCCCCTGACATGTGATGTATCTGGTTGACCAGTATCCTTCCATGGAGAGGAGCAC
 CGGTACACAAAAGTTCTTTCACATCACAAGTTAAATAAAATCACTGATCTATATCTTAAG
 TGGTACATATTACTGCTAATGTAAGAGAAAACAGTATAAATAAATAAAGGAAAACAAA
 40 CAAAATGCAACAAGTCCCAAGAAAAAAAATACTCGTGAATGCTAATCACC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 128>:

GNMCG29F gnm_128

CCATACATCCAGTTCACACAAAACCTGAGTGGAAAACACAGAAACCTGACCGGAAGAAA
 45 GTGGTGAGGATGGTGAAGAGATTGTTATCAGACCACCTAGGGATTTAAGACAACCACCAC
 GGCCAAAGAAGAGGAGAAGTCAAGGAGAGGACCGTGGACGTCAAAGCGGGTTGTTTCGAT
 GTAGCCGGTGAATCAGGCTGGCCATTTGAGAACAACCTGCACAGCTCCTATATGAAAAA
 CATATGACATCTCTTTAGATGTTTTACTTCTTCTGATCTGAATTTATTATTCTTA
 TACTTAGGTTTAGAATATTATTTCAAAGCCTTTCTCTG

5 TTGCATAAAATAATATGACTAATTCGTGAAAAGACAGGTCCTCCCGCCTCTTCGACCTTA
TTGACCTCATCAACCATCTACTTGAAAATTTACTCTATTATAAATATCCGTCCTCTCACC
TCTCACTTTTAAACAAAACCTTAAGTTTTCTTAAGAGTCACTAAGAACCTCTAAGATTTT
AAAGAAATGGAAGGAAAAGGTGGTAGCgGTGGAGGAGGGAAAAGGTGGTGGTGGAGGAGGAG
GAATAAGCGGCGGTGGAGCAGGAGGGAAAAAGTGGTTGTGGTGGAGGAAAAGTGGTGGTG
10 AGAGTGGTGGCGGATGTGAGGAGGTGGCTACATGGTAGCGCCGGGGAGCAACGGATCTT
CTACCATTTCAGAGATAAGTTTGAGAGTGATACTAAAGGTTACTTTGATAATCTCCATG
GTAAAAAGTGAGTTTGGTCTTTATTGATCATCTATGGAGAATGGAGTGAAGATGGTTTAC
TACCAATATATTATGTAATGAATGAATAAATGTAATTTGCTTTATTGTCTTACCCCAT
GTTAACTATATGTGATTATCATCAAGAGACTCTAAAACCTGGTGAATAATCAGTGATTGAA
15 ATGTAATGTAAGATTAATTTATCAATTTGGTTCTCACTGACCATTATGGATGGGCTTTT
GAATACATCCATTTCAATTGTTTGGT

[illegible]

35 TATGAGAGCAAAGCTTTTGTTCGGTTATCACCAAGGACAAAGACATAACCTTTGGGGAC
AAACTGCAAAATAAACATGAAAAGCAAACATTGTTAACAATCTGATACTCAACAAGGATGA
ACAAGTGGTAAGTAAAAGTTGCTCACCATTGGTTCCATTTTCATATGACATTGGTTCTAAG
ACAAAATCTTCTTCTTGCACAATGTCATTACAAAGAGCTTCCCATCACGAACCTGCATG
GTACATCATCTACAGGTTAGACAAAAATTTGATTAAAAAAACAGAAAAAGGGGTTAGGTC
CATTTCTGAAAAAATAAACTTGTAGTCCGAGAAAGCCTCTACACAAATAATACCGACCGA
GGTGAAAAAAGACTTCAATGGGTGAAAAAGATCAATCAACAAGTGGATTGGATATAAAGG
GCTTACTTCAACCAGTCACTTTCCTTCCACTATCCTTTTTATGAATACATCATTGGA
ACTGTAGCCATATTCCGGATATTCTGCAATTCAAAGGGAGAATATCATCAAATTTCTTTA
40 GTTTACAAAAGTTGATACATCTGAATAACAAGAACAATGAACTGTGACTTACCAGCAAAA
TTGGAGGAGCCTTGAAGATTACTATATCTGAAACCTCTGGCTTCTGAAAAAGTATGAGA
CCTGACCAACACCAAGGCACACAAACGGTCAGTTTAGTTCATAAAGAGACTAAAACAGCCT
CATTCACAAACCTACATCAAGCAACTAAACAAGCTCAAGGTGAAGTCTAGCAATCACCT
ATAGAAAAACCTTCACATTCAATCACATAAGAGTATCATACCAATATCTCCATCCTAAAA
45 CATGCAAGAATAATTCCAGAACCGTGTAGAAAAAGTCACCATCCATCATCAGCTATGTT
TTATGATTACAATTTATACATGAACAGACTCAGAATTCATACCTTCTCCGCCATAACGCGA
TCACCCTTGTCCAAGGTAGGGTACATAGACGTTGAAGGAATCGACTTTGGCTCCGCAAGA

-641-

5 GCTGATCTAAAAAGGATAGAAACAGTAACCGCCGTGAAAGCAGCCTTAGCATCCTCAGAA
CAAACACTCAAAGCTTATTAACCCATCCACTTCCTCCATTCTCGATTCTTATCATCA
TCATCATCACAACTGTCTCTCTTTATCCACGTCATCAATCACCGGTGGATTCTTAATC
CATTTCGACCCTTGAAGAAACGGAATAATAGAAGAAGCCTTGAAAGATGAAACCCCCAGA
ACATTCATCGTTGACGACTCATGACCCGTCGTTGACTTCAATATCGAGATCAAACCCATC
ACAAGCGGGCTTTGACTTCCTTCTCCGATGAGCTCCCTCGCGATGCTACCATACATCGAT
GCAGGTGATTCCGAGGAGATCTATCGAAATCACGCTTGTGGGGAGAAGAATCTAGGACG
AACCAAGGATTCAAAGCAGTAACCACCGGGACCAAC

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 132>:

gnm_132

15 CAGCCATTAATGTTAACATTTCTTTATGTACATTTCTGATCTTTGGTTGTGTGTTTTCTC
TCATCTATAGGTGCGACTTCAACTGGAACACTGTTAGCTGAGAAAGCACGGTTGGCTCA
TGAAACTCGATATACACCCGCGAAAACCTCTATCTGAGAGGAGTCGTCGAATATCACCA
GCTAACAAATGCAAGATGTGGTCTACTTTGATGAGAAGACTGAAGAAGTAACGGAGGTATA
TCCCATTAAATGTGTCTTCAATGTCTTCTTCATCAGATAACTCTTACAATCCAAATCCAAG
TTTCTTGGAGCTCAAATGAAACACCACAACACTATCAGTTTCTGCTGTTCTTGTGTGA
ATCAGACAGAAGACAAATCGTTGCCTGTAATTGCTCTGTATTGTAGAAATATATATAC
TCTGTACTCTTTATWTGGGGTGGGGTCTTAAGAATTAGCAGTGAATGtAtTTATTACCCT
20 TAATTAACCTAAATAAAGAAGAATGTTCTATTATTTCCTGAAACAGTACCATGAAAGC
TAAAAGTTGAAGTGGTGAGTAGAAATTAGTCAATTATTAAATGGATATTACCTGAAATTAC
AGAACAACAATATATATATAAAGCTACATTAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 133>:

25 **GNMCG36R gnm_133**

30 AAGCCTTTTGGCTCTTACTGTTGATGAAACGAATTTTCTTACATAATGCTGAAAAGTTGT
ACATGATTATGCTGAGGTGGCCACATATGGAAGGTTCTTCGTAATTTTGTGGCATAG
TGTGAAGTTAATCAAGAAAAGTCATTTTCGATTGAGAAGCAGTTATGACCTGAATATGTTG
GCTAGTTTAACTTTTCGCTGACACCAACAATTTTGTAGAACCTGAAACAAATCTCT
TTAGTACTACACTCTCTTACTAGTTGGTCACCAGTAAGAGCTTTGTTGGTGGCGAACT
TATTCATTTTCTAAAGAACCACTCTTATGTATTTATTTAGGCCTGACCACATTTTGCAA
GACTTGAGAGCCAAATTTTCTCTAAAACGTAAGGAGAGAGCGCCTGAAGTTGTG
TCCTCCATCTCATTACCTGCAAAGAGGAAGGAGAGGTCTATCTCGTCTTGGTGGTAAGC
ACACCCAGGGTTTCAGCACAGCTGGTACAACAGGAAAAAGAACAAGCTGCTACGAGA
35 AAAGATGTAAGAGGTAGTGGTTCATTCACTAAGAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 134>:

GNMCG36F gnm_134

40 CCATTATTGTTTTCTACTTGTAAGTGTGTTTAGAAATATATTGATTGTAAAGAAAAAAT
GTTTTTTAGATATTATTTTTTAATTACAAAATTAGTAAACCTCACTATAAATTAATAAT
TATTAATAATTATCGATAAATTAATATATTTATGAATATATAGAATTTTTCGTTTCTAATA
TTATTAATTTGTAGAGGTTTTATCGTAATTGTTTTTGGTAAATGATTTAACCTCTTAAT
TAATCTCTTTATACCAATTTACAAGTCTACTTCATGCAGTTTTCAACAAGTGCATAATTT
GTGTTTAAACAATATTATAAGAAACAACCTTTAAAAAATTAACCAACTAGGCATTGGT
45 TGAAAAACAATTACAAAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 135>:

gnm_135

```
5  TACATCAACTCCGTGAGACTTTTGCATTTGCTACTTGGAGCTCTACGGTTACTTCCGTTG
   AAGCGCTCTGCAATGAATGACCTTTTGACTGTTTCTACTACACACGTTTTTGACGTTTAT
   CCTGTTTACCTTTTGTCTTGTACTACAGTGATCTTTGAACCTGAAAGTGTTCCTCAATA
   TATGTTAACTTGATTCCAGTTAGATTGTTTGGTTTTTATACAAGAGATTGGCCTATG
   GCTGTGGAGTAATGAGTTATACTTTGTTTTTATGACTCGGTTAAGAATCTCTTGCCATA
   AACTGACsAAGCAsACTCTTTTTTGACAAAAAAGTATCACAACAGAGTAAATCAAG
10  ACCTAGACGAAAAGCGAAAAATGACAAAAGCCACAAGAGTTGTGGTAAGCAAAATGTTTG
   GGAACCGCTCGAATCTTTTAAAGCATTGGACATCCATGAGTCCGGCGGCAAATGATGTG
   TAGAAGGGTATGTCACAATCTTTGGAGCAGAATCCGAATGTCGAAGTGGAACCATATTCT
   CTACGAAATGAGATAAAACACGAATGTCTGCAGCGATAAAATGGACTTCGTTTGTTCCTG
   GATTATATTGAACAGCCTCTTTTCACTGTCATGGAAGAAAAGATTCCCTTGCTTAGAAA
15  CTGTCACCTGGTCTACACCACAACCTCCATATCCAAGGGTGAAGAGCTCTAGGGAATAAAn
   CAAATGAGTACGTCTTGGTCCATGTATCTTCCGGATA
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 136>:

GNMCG37F gnm_136

```
20  CCTAGAAAATTTTCTTATAGAGATATATACAGACAGTAACAAATAACTTTCTAAATTAA
   CTCTTCTTATCACATATATACTGAAAATGTAACCAAAATACAACTGGATCCAACCTCAT
   ATATACGTCAAATGTTTTCCAATTCAAATCTAACCCAACACAAATTAAGAACGCTAAAT
   TGATCTATAGCTAAATGTCATTACACAAGTAAAAAGAAACCGTTTTGTAAAGTTATAATC
   AATCTGACCATAGTCTAATTTATTTTCGTCACAAATATTTTCTAAACGATGATACTCTTAA
25  ATGTTAAATTCATCATATATTTATACCCAAACAAAGCGGCTAAGTAAGATAGGAACCT
   TTAACACAACCATAAATAGC
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 137>:

gnm_137

```
30  TGTGTGCTCGCATTACGACATAAAAAATGTAATTTGAGTTTTATTTCAATTTCTTTGACAAA
   AAAAAAAAAAAGTTTTATTTCAATTTATTTACCTTTTTTATAGATATAAAATATGTAA
   ATCAAACCTTTATATCGTACAATTTAAGTATATATTTTGTGTTTTATTATGTCAAGTTCA
   TTCATTAATTTTAAATTTGATACAACAAAAGAATAATGTAGAAAGTCAAGTATACAATGA
   TGGATGAATGGATTTACATAATGCTTTTTTGGTACGTAAACGTTAGTATTTGCTAACAAA
35  GTATTAGTTGCGTTATTTTTTTCAGAACAATCAATCCTAATTTTAAATATTTTTATTAAA
   AACACTATGATACATATTAATTTACATTATAATTTGTTATTGAAAATAAAAACGGAGCAA
   TTTTGTCAATAGGTTTTTTTTTGTCAACCACACAAAAATGGTTTACAAATTACAATGTAA
   CTTTAAAAAATGGTATACAACCTACACTAACCAACCATAGGTCACAAGAAACCACACTTGCT
   ATTTTTTCTAGATCCAAATTTACAATTTAAACCACACAAATTTTCTAGAAGGAATCAA
40  TATTTTGGAAATGCCATTTAATAAACTTTAACTGTTATTTTTAAATATATTGAATTTAAAA
   CGAACTTTGAATGTTTGTGTAGTTTGTAGACGAACAATAATTTGTCAAGTTAGCTAGGTG
   ATCAAGATAGAAAAAGTTCGTGTGAATCATATTTGTTTCATGAAAATTTGGTGTAGTTT
   ATGGTTATGAGGTTATCTCATATCTATGTATAAAATTAGAATGTAGAATTTTGTCTGACA
   TACTTGTTTTAAACTTAAATTTATGATACATATATCACCTATTCTTTTAATTCTTAACT
45  TTATAATCCAAAACGCAAGATCATTTAGGCCCATGATTGGAATATTGTTGCTTATGT
   TCACTCAGAAGTCAGAAACCATACCATATCATGTCTTTTGTGAACTCATAAGCCAA
   CTGTGGTAGGGGAGGAATTTGCAACAGTGGTCCTCTCTCTCTCAGAGTTCATTCTCCC
```

TTCTTCACAGAAAAAAAACCCCTTAAGGATTAAATCTCATCACTGTTTCTTCTTCTT
TAATCACATCTCAGTTTATGTGTGTCAGTGGTCTCTCTACCTTCAACGATTATCCAAT
GTTCTTCATGCATATATATAAAC

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 138>:

gnm_138

ACTAGATACCTCGAATAGTTCCTGTGGAATCAAACCAGAATTAGTAGACACATAATCTTA
CCAAATGTGAAACAAGGGTGCTAATAAGGGCCTTGTACAGATCACGATCGAAACAGAGG
ACACAACGGATAAACTCAAAGCGCCGATTGTTCCAAGCTGGAACCTCTGGGCATCGCTCA
10 TATTTGCTCGCTTCTTCTATCACGATCTACGATGATCTAATAAAACCAACAATTACAGTA
TGGAGGAATCAAACCTCACATCACATGCTTAGCCAATCAAACCAAAAGTAACTGTAAGAG
CAACGCGrAGAAGAAAAAGGAACCTCATTTACGAAATGCGAGAGAATTCAAAGCAGGA
GAAGCTGAACTGCACCAATGGAAGATAATAACAACACGTCAAATTACAAGCAGAACAAGG
ATAGTGTAAGTCGAAGAATCCTGAAGCAATAAACCCCTAGATCTATCGATGAAGATAAAA
15 AATAGTTTAAACGGAGATTCAGGAGAAGAAAAGGAGAGAAAATGGAGAGAGAGACCTTGAG
AGAATCAGACAAGTCTAATGGAGGAGAAGAGAATCTGTGAATTTGGAAGAAGAAGCCTA
TTTTTGTAATTCGAAGAGATTCACCATACGTCAAATTTGGGCCTATATGTAATTAATA

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 139>:

20 **gnm_139**

CCATCTCTCAAACCTTTCAACGAGCTTAATGAAGAGAGAATCAGCACCAGGCTCTTCAGA
GAAGAAGCTGTATATGTCTTCTCACAGCTGCCTGATTTTCTTATGTACTCATTAGCTAA
TTTGACAGAGATGAGGACATTCTCTCCTGTCTTGAATCCCATCTGCCGCACTACAAAAGA
CACAAACAACATTTCTTAATATGCATCATAATCTAAGATCAGGAAGATTTCAAGGAAGC
25 TATGTAGATTGATTTTACCAACATAGTGAGAGAATCTCTCAAGCTTCTCATGGCCTTTGT
GTTTTTGAGACGATCTGAGACGAGGGATGTTCTTGAGTGACGTAGCTTCTTAGACGGA
AGTGCAGTGCAAGGGCTAAGAGTAAGCCAATGGATGAGATTACTAAAATCTGTGCGAAGG
TCGTCGTGTTGTTGTTGCTGTTAACTCTGGAACACACATTGATCTGGATTTGCTTTGGG
GATCATCAAGAGACATGAGATTAAGATTGTTAGAACTCTAAGATTGGGTCCATTCTTGAG
30 TTTGTTTTCTGTTACGAGACAATGTATCTGCTTCTCCACGTGTGTTGTAATAAATAGC
TTTGAGTCTTATTACTCCGGAAGTTTCTTAGTTTGCTTTTTGTGTGATTGACTCACCAT
TTTGTTTTAATAACCAAACCTCTCATCCCCAATGTATGATATAATAGTGTGTTTGGCAATGG
TTTTATAAAATCTATTTCGTTAAGGCTATAACATAACAAGAATCTGTC

- 35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 140>:

GNMCG42F gnm_140

CCTGCAAGCAGAGACGTCTAGAGGATTGATTACGTATCTACAAGTAAGAAATAGAAGTT
ACCGGCGACATTGATGTTCTCGACGATGTAAAGAACATTGTCCTCGTTGATTCTCCCTT
CTGCTCAGCTTCAAGGATGTGATCAATGGCACATTTCAATCCTTCACTACCTGTAGGCTT
40 AGAACTCGCAATTTGCCGTGAAGATGAATCATCAATGTCAATTTCCCAAAATCAAACCTC
AAAAGATAAACTAAAAATAGAAACAAAAAATGAACTCACTTCTCTCATCAACAAAGT
ACTTCTTGAAAGAGCGATTCTTCGATCTTTCACATCTTGACAAATCTTCAAATAGCCTC
TGAGGAATGGTCTAAGGATAGGAATGAAATCTCCATAGTTATACTCnAAGCTCTGAGCTA
ATCGACTTCTCTCACCATTCAAAGCCTTAAGCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 141>:

gnm_141

```
5 CTTCTGTTTTATATGAGGTATCCACTCGGTCTAATATGGAAACACATAGACCGTAGTTCT
  ATACATTGGTTCAAGTCTTGTGCTTATCAATATGACTGTAAGGTCCCCATAAATGTTTAA
  ACTAAAGTTAACTCTCCCTTTTATTTCCGACTTGTGTACCGGGTGATATCTTATGATCTG
  GGACTTTTTTCGACCCACCGGTGTTGAACCTTAACTACTCTATGTTTTTTTTTGTAAACA
  GGTAGAGATAACATGTATGGGAGAACCAGTGATCCCAACGTTGCAGCTTCACAGCTTAGT
  AGACCTATGGTTGGAAACAACCTCTAAGCATCAAAGAGTCGCTGCGTCAATAGGTTTCATC
10 TGCAAAGGAATTTGTAATGGTGCTAGTTTATTCTCGGAAGCTCCCTGAATGCAACAATA
  AAGAGCTATTCAATTGAATCTTTCTAGACCGAGAAGAAAGAAAAGTGCAGGAGCAGTGGA
  ATGCTCTGTGTAGAAAGAACTTAGCAATTTATATTTATTTAATTGTAATCTTAAATTT
  GAAACATTGGTGTGAGACAGACACTTTGTTGTTTATCCAAGAAGATTCAAAATGGCTT
  TTTAAAGGAGATTGTGTCCTTTTTGGATATTTGAATGTATGATTAGGATAATGTTGTCAT
15 TTCTATAAATATTTGTTTCCTTGTTTGGACTAAATGGAGAAGTACACGGAATCCTTGGA
  ATCGAATGACTTAGCCATTATTGAGAAGTCAAAGAAAAATAACCAAAAAAACTTGTG
  AAGTGACCTTTAATAACAAGAAATTAAGAGAGATGTATAAAAGTTTTCTAACAATTTTGT
  TCACCAAAAAAAGTTTTCTAACAATTTTAAATACAAAATGCAAATTAAGATGAAT
  TTTCTTATTTCTTTTTTAAACATAATTTGAAGAAATTTGGTTGTCTTTTGCATTTG
20 TTTCTAGATATTTCTAACTGTTGGGAAATAAAAAATTTGCACACAAAACATAGTTAAA
  TTCACGTGGTATTTATAGAGATTTACTTCAACCAATTTGGATTTTGGGTCAATGTTTTA
  TGGACGGATAAACTATCCATTAGTCAAATTTCCACAAAAATAATATGTGAATTAGATTCTG
  ACAAGGCTAATCCCCCAACATACGATACTAGAACAAACGTCTCTGACTACTTGACGT
  ACAAATGT
```

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 142>:

GNMCG44R gnm_142

```
30 TCTTTTAGTTTGAGATTAGTTGTGCAATCAAAGGAAAGGAACTTCTTGGCGAGTAGAGA
  GAAATGGTGATTGGTGAAGGTGAACTCTTTTTCTCAATTTAAAATTCATTTTGTGA
  TTTTATAGCAAAAGTCAAACATTTGACCGAAAAGGAAGAAGAGATAAGTCAAATCC
  GGCTGCTGGGCTTATTGGGTACACGATCATGTCGTTTCATTTGTTATGCTTGACGAACG
  AAACCACTATATTTGTTTAATATTACTTTCTTTTAAGTAAGGATAAAACATGTCATTGT
  TTTACAAAAAATTAACATGATAACATTTCTGGTCCCTGAATATACTTTTTTTTTTGT
  GAAAGGGTTTTCTTATATAACTTGAACATAAAAAGTATACAAAAAAACAAACAATAAC
35 CAGAACTAGATTGGGGAAGAAGACCAACTAAGGTACTTAACAAAAGAAGATATCAAAAC
  CTATATATCTTGATAATGATGGATTCTTTTGGTTTGTGATGTTAATGATAGTTTTTAGT
  GTAGAACAATAAGAAAATTGACTGAACA
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 143>:

GNMCG46F gnm_143

```
40 CCGTGACTTCTTCTGCCGGGATCTTCACGCTCTCATCCCAGAATTTACGCCCATAATCG
  GGTGACGATTTTACGCTGGAGTTGAGGTATTCCAGATCCTTCGCTTCATGCGTTGCAC
  CAAGCATGTTGGAGTCTGTGGAGTAGGCTTTTTTCGACAGACATTTTGTAGTCGAAACCGC
  AGCAATCATAAATTCAGACATCTCATGACGGCCGCCAGTTCATCAATAAAGTCAGTATC
45 AAGCCACGGTTTGTAAATCTGCAGTTCAGCATTGGTCAGCAGACCATAACGATAGAAACG
  TTCGATATCGCTTTCTTGTAGGTGCTACCGTCACCCAGATATTACGCCATCTTCTTT
  CATCGCAGCAACCAGCATGGTACCAGTCACGGCGCGGGCCAGCGGCGTCTGTTGAAATA
```

GGTCAGGCCGCCGGTGGTGTATGAAATGCGCCACACTGAATAGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 144>:

gnm_144

5 CTAAACTAAAGTTATGGTCTAAAATCACACTCTCATTACACAATACTTCTATTATTAAT
GTTTGGTTCTGACTACAATCAAACCTTTAGATCAAAATTGTTTCTTGACTTCTTGTGAT
TCACCACCAAAGTAGACTTATCTCTATACATGTTTTCAAACCACTCAACAAATATAAGC
AAACAAAGATCTTCTTCACTTTGCACATAACCAGAATGAATTTCTACTAAAAGATGAGAT
10 CTGAGAAAGATCAAGGAAGGCTTTTTACCAAGAACAGGAGCAGAGATGGCGACGGTAGG
CTTGAGAAGGAGAGCCGACGAGCGCGGAGACGtGGAAGCGGAGGCAGTAAAGCTAGCC
ATTTCTCTATTTGCTTCCCTAACGACTGAGAGACTCTCAATTGATTTTTGTTTGTTC
TGTTTGTGTTCTACAGCAACAAGAACACTTTTAATTTCTTGCTTGTGTTGGCTTTTGGA
TCAAACATAAATATGTGGTGGATAAAAAATCTGTTCGAACCAACACAAGCCATCTAAGT
GGATATGCTTCTATCCATACTCCACCAATCGACGCCCTCCACGTGTCATATTC

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 145>:

GNMCG47F gnm_145

CGAAGCTCTGATGCTCTTCTCTTCTATCATCTCAATCATTGATTCCCTGAAATCTTTCTT
20 TGGATCAACGGACCGCTTCATCACAGCGAAGTCTCCTAGAACATCTTGTTTGCTCTCTGA
TCTTCTAGAAGTGCTTCTACGAGTACCTGAGAGTTGAATTCAGGTGAATTCACCTCTTT
GAGGTTTATCCAGCAGATGGTTTTCTTCCACTAGAACTTGCTTTGGTACTTCTCTC
GGCTTTATATTCATTATCATCTCTTCAAATTTTACAGAAAGATGGCTTTTCTG
CGGTTTCTTAATCGGCATGCATGCAGTACAAGCTTTCTTACCGAATCAATCACTTTG

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 146>:

GNMCG48R gnm_146

ATGGCATAGCTATTCAATACAGATCAAATTCACCTCACTTGTTACCCTGTCCACTACCAT
GCAAATTATCAAAGTAACCTTTAGGATCACTCTCAAAGTTATCTCTTGAAATGTAAGAAG
ATCTATTGCTCCCTGGTGCTACCATGTAGCCACCTCCGCCCCCACCACCACCGCTTTTCC
30 CTCCTCCACCGCAACCACCTTTTCGCTCCTCCACCGCCGACGAGCCTCTTCTCCTCCAC
TGCCACCACCACCACCTTTTCTCCTCCACCGCTACAGCTAACGCCTTTTCTCCTCCA
TTCTTTGAAATAGTAGTTCTTAGTTTCACTCTCTAGAAATTTTAAAGATTTGTGTGAAT
GAGAA

35

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 147>:

gnm_147

40 ACAACTCTTCACTATACTATCGCCATATCCATCAATCTAACATCCCTGAGACCAAATTA
GAAAGCGAATTGAAGAAACCGCAGAAGTAGAAGAAGCTCACCGACGGAAGTGATGCTCTT
GAGCCGATTGAAACGAAACAATCGGAGCTAAACAGATAACAATAGCAGCGAGAGGAT
CAGAATCCTCTGCCAAGCAGAACTTGATTCAATGTGCGTAACTTCTCAGAGAACGC
TTCATATATTTTATCTCCGTTGCGCTTTAATCGTTCTCCAGGAAGAAGAAGCACATT
CCCAGAGGGAAGAACACAGATCTCGGAGATTCTCTGCTTCTCAACAAGCAATTGAAGAA
AACGATGAGCAGATTAGGGTTTCAGATTCTTCTGCAATAGGATTCGATAAATGCGAGAG

-646-

TCTGTTTCTACGATTTTCATATCTGGAGATTGAGAGCTTCCTCGTCATGTTTAGAGACTT
CTGCTCTTTTATTTTTTTTCGCTTAACTCAGAATTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 148>:

5 **gnm_148**

TTAAAGAATGCTTTTATTAGTATCATCATTCATCATCAACATCAACTTGAGACATC
ACATTTACACGCTTGTGCTCACATAATTAATAAATTTATTTTATGGTGAATTTTAAAT
TGGTTGACTAATTGAAATTGTATTGGTGAAAACTGAAATCATAAGAACATAACTTTT
10 ATCTAAAATATTATATAATTAAGGGAATAGTACAAAATAATTATAAAACAGAGAATCAG
TTGCTTCTGATTTCTGACAGATTCTATCATCATTTTCATGGAGATTTTACTCTTCATCGA
AATGATAAAATAACTGAAAAATGTAATTAGCGAATTATAAAACAGTAGCAAATGTAAACA
GTTTTAAAGATACACAAAAAGGTTGACCAATGGCAATTACAAAAGAAAAATACAGCTT
CTTTTCCTCGAAGTATGCTTTTGGATTGAAAATATTAAACGTTTCTAAACGGACAAATC
AATTTAATAAATAAAAAACAAAGTTTTCACAATTCAACTAAAAGTTTAACATATGTGAATC
15 TATCTAGGTTAAAGACTCAAAGTACAGTTATAATGAGTTCAATAGTTTCATTTTCGATG
CTTCTTTGAATTTGGTAAAGTGTGAACCTTATCTTAAGTTTGTAGGTAGAAATAATTTAG
TATAGTAGCACTTTATGTTAAATTAAGGTGATACAGATACACAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 149>:

20 **GNMCG53R gnm_149**

GAAATATCAAGATGCTGGCGTAACAGCATTCTGGTGGAGAAACGTGGTCGAACTCAT
ATAGCGCACGGATTCAACGGTCGCTTTCAGGTTCTCAATGGTATCCCACGCCAGTTGACA
GTCGGCAATCTCGGTCAGGAGTTGATGGAAGTTGTCATCAAGTTCAAAAAAATCATCCAG
TTGCTTGGCGTCAATGGCAATGCGTTGCTGGTGAAGATTTTGTTCAGTTGATAGCACTG
25 GCTTTCGGTAATCATGCTCGCCGCCGACGCCACCGCGCACTCAATGGCCTGACGGAT
AAAAGTCCGTTGCGCACCTGGGCCATGGAATTTTGTGACGTAGCTGCCACGTTGCGG
ACGAATTTGAATCAGGCCGTTTTCCGCCAGTTAATAAAGGCTTACGAACCGGCTGGCG
TGACACATTGAAACGAACAGAACTTCTTTTCCGACAACGGTGTGCCTGGAG

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 150>:

GNMCG56F gnm_150

CCGTGGACAGATCCTGACTCTCAGCAGATCCGAATTTTCAGAACAAGGTAAAAATGATCT
TGGATAGAAGCTTGAATCACGGCAAACAGTTTATCCCTCACACACAAACAAAATATTT
AATTGTTAAAGCACATATTTTCACACATATTATAATACAATTAGGTCAAGAATTTAATTT
35 TTCTATTTGGAAGTATGATCAATATATAACAGAAGAAGAAAATGTTACGTGCCTGTCGC
CAACAAGTCTGTACATTCTAAGATGAGATCTTCTTCTGTTCCGTCATATTGATAAACT
CCCATTTCTACTACTCACTTCTGCATTTTAGTTAGTATATAAATTCAAAATATCAGTGA
AAACGTACATCAGAAACAATTTAATGTTACAGGTCAAATGAATGAGC

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 151>:

gnm_151

CAAGACTTCTTTCTTCTCTGCGTTGAGCTTGTTTATGTAGGTATCAGCGTCTCTGAGC
CAACTCGAGCTCATGTTGTAAGCTTTCAGCTTCTCCTCAGCGGCTTTGCCGATCTCGAG

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CTCATTTTTTCAGAGAATAAGTCTCTTTCTCAAAGTGCTGAAGCTTCTCTTTTCGCGATACT
CAGCTCTTCTCCAAGGCTAGCACTTTTGTAGCTACTGCATCTTCTTTAGTGCTCTTT
ATCCAAATCAACACTCTTTTGTTCAGCACCAGATGATCCTCTGTGTCAAAGACATGAA
GCTCTGAAGCTGATTCTTCAGATTAGCAATCTCGTCTTCGTGCATTGCGATCTTCTCATT
5 AGCTTCTTTAAGCTCTCCCTCATATGTAGTAATTTGTGAAGGAGATCAACATTGTTGTC
ACCATCAACACTTTCTGCTGGAGAAGGAGCTTCTGTTTCGTCTCTTGAAGCTCAAGCTC
AAGTTTCAGCCATTCTACGGATCAATGCCTCGTCACCGTCTTCATCATTGGCAGAGGAATG
ATCAGAATCAGAACCAGAATCTGTCAAAGACGATGAATCTTCTCTTCTTTATGGCTAGA
TTGACGGCGACTCAACTTCTCTTGGTAGGAGATGATATCTCAAGAGAGCTCTGTGACTG
10 GATCTCAGATGTATGGTTCTTCTGAAGTTCACCACTAGCTTGATCATAACGCTCAGCCAA
TGCGCGATACATGCGGTAGAATTCCTCGACAAGCTGGATTAACCTCGGGACGTTTCTGAAA
ATACATCTGAGCTTTCTTTGCAAAGAGTCTGCGTCTTCTTCAATCAGTTTAAACATGTG
GTTACGCGATCATCCATCTCTGAGAAACCAAAACAAGAACAAGAGAGAAAACATCAGAT
TGTGTTCTTTTGTAGTAAGTGGAGAGCTCAA

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 152>:

GNMCG60F gnm_152

TCCACCAGCTCAAAGACGTGAGTAAACACTCTAAACCCAAAAACAAAGCTTCTTCTTCTT
CCTCAAACACTTGTAGCAAGAAGAAACCTTCTCAGATTCTTCTCCTCAACACTCTTATT
20 TCTCCAACAGCTTAGTAGCTAACAATCCTCCTCACCATAACTCACCAGAAACTCTCTTC
ACACAAAAAGATGAGTAAAGAAAGACACTTTACAAGCCATCCCTTAAACCTTTGACTC
CTCCTCCTCTTCTGTATCTGCAAGTTTCAACAAGAGCAAGATCAACGATCAAGATTCTG
CTTACAGCTTGTTCGGCTATTGAAACCTCCCTGAGTCTTTTGTGTATAGTTTCTACG
AAGAGGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGAT
25 AAGCTTTCACCAAGCAGAAGGTCAAAGTGATTGATTGCGGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 153>:

GNMCG62F gnm_153

CCAATAGGTCCAAGTAATTTGCGGAAAAGTTAGTGGGCTTTAAATATAAAACATGACTGA
30 AATTGGGCGTATTTCGACATTTAGTTGATTATTCTCTAAATATTCGAACTCTCAATAA
AATCACTCTCTGGCGACTCAACGTTGGCCAGAGAATCGGAGAGGGACATTAAGTCTGGC
AGACTGGCAGAGTGGCAGTAACCATACGCCGAAAGAGATATTCTCAACTTGTCCCGTAAA
TCAACATCTTTACGAGACCTTCATGCACCTTCGGTTCTTTCATTGTTTCTGGGTGGTTGG
TGTGGCAAATAGCTAGCTGTACGTTTGAGGTTGCCAAGAACTCCAAAACCTCAGACAGTAC
35 GTGAGTCTCAAAAAGTTTTCTCAGCTAGTTGGAGATTTTAGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 154>:

GNMCG63F gnm_154

CATATTAGATATTTTATCCAGTTGTATCAAGAGCAAGTCCACTGGTCCAGTAGTCCTCA
40 TTACGGTAGCTTGGGACCTCCTTTTCTATATCTCTCTTTACTCTTCGTCAAGTTTTT
CTATATAGTTTTCTCTACCTCACATCTACTTTTTTTTTTTCATTGCATTCTCCAACCTCCAAA
TCATCAGTTGTAAATAATTTGTCCCCTTCCACTTCCAAATACCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 155>:

GNMCG64R gnm_155

CCAAACACATCAATCCTTCTCAGTCCAACATGGTCCATTGCTCTGCTTCTAATATACTGC
AAAAGCCATCAAGACCTGCTATTTCAACTCCTCCTGTGGCTAGTAAATCCGCTCAGGCGC
GGATTGGAAGGCCTCCTGTGGAAGGGGAGGGGAGAGGCCACTTGCTTCCGCGGTATTGGC
5 CAAAATATACGGATAAAGAGGTTTACGAGATCTCTGAAAGTATCCTTTATTGCTTCTA
GTACTTTTGCCAAATATTTTATTCTGGACAGACTCTGGTGACTCATTGTTTATCTTAAC
AAATTCTAGTTTGAATTTGAACATTGTACCTCTCTTTGAGAAAACCTTAGTGCCAGTGA
TGCTGGTCGCAATTGGTCGTCTAGTTCTTCCAAAAGCCTGTGCAGAGGTAAATTTCCCAT
CCTTAGGTGATGCTTTTCTTGCTCTTGAATATTTGTAGAGTTAGTACTGATGTCT

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 156>:

GNMCG64F gnm_156

CCTTTTGTGCACATAATTAATTTTATATTTATAAAGAGTATATAAATAACATATGATTG
GATACTATTGGTGGATTATTTTGGGATTTTCAATTGTACACCTCTAGAAATACAAATAA
15 AATAAAAATACATTTTGGTCGTAGATTGTACAAGCATTGATTTTTCGATACAAATTTGT
CATCAATATCTTCAAGATTTTCCGCGGACAGTCCCGAGACATGCGTTAACATGTGAGTG
ACACATCTTAACATGCGTTTCAAGATTCTAGCTCTGGATCTTCACACTGAACAGTTTCGT
GATGTCCCAACACCGCCACACCCCGGGAACCGAGCGAGCTAGTTAACCTTGAAGATCGT
CTAGCCTTGGTTAAACAT

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 157>:

gnm_157

ACCACAGTAGAAGCCTAAAGCATTGTCCAGATATCAAATTCAGGAGTATAAAGGAACTG
AACCACAACATGTTGAAAGAAAGAGAATAAAGGTGAAACATTTACCTTTGATGAGGAGAT
25 TGTAGAGTTAACACAACCGAAGAGGCCAAAACATTGTGAGAGAAGACTACGTAATGGTA
GAGATCAGGATCATTATACTTTGTTGCAAAAGCTGCCTTTTTTCGTGATCCAGGGTAAA
ATATTCTGTTGTCAACCGCATTGAGAGACAATGAAGCCCTTTTGGGGTAGTCCTTGCTGC
AAGCTGCATTAAATATGCTGCTTGTCTTCTGCGCCCGAGCTTGTCTTCGGTTTTATA
AGTCATGGCTTGGAGTTTGGTAGCAATGGCAGGGCAGTTGTGAAAGGCACGGCTGACCTT
30 GTATAACGCAACTTCCATGGCCTTCAATCTGTTAGGAGAGCTGAAAAGAAACAAAACATT
TATGTATGACTCGTCTAAATTAACACAATATTCATTAAGATTTAGCTTCATAAGTAAAGG
CCAAAACCTTTTACAGGATGGAACAGGACTCCCTTTGAATCAATCAGCTGTGCTCACCTC
TTTGGCAAATATTTATCGCTTGGTAGTATCACCAGTAGCCGTTCCAGCTCTTTCGTTCC
AACTCTCAACTCGCTTACGATTTGGGAGTTATTCCCAGGTAGGGCCAAATTCAGATAGGC
35 TTTGCTTGGATAATTTTGTCTCTGATCTCGCTTACCCTGTCATCTGTTGCTCTGTCAAG
TTGAAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 158>:

GNMCG68R gnm_158

GGGACAATTGTGACTATCCCACCACCATGAATGTGATTCTTAGTCATAGACCTCTTAA
CTGCTTCTTGCTCTGAGCCTGAGAGAACATCAGACAAAGTGACTAAATGTTAGGACCAAG
AGACTAAACACAAGGATCTAATGACTTATATAGTGAAGATCAGGAAGGTTTCATACCGT
AGACGAAGCCATGACCGTGGAGTGAGAGAAAAAACCCCTACAAGAAAAAGATCAAGAAC
TTAAGTCATTTGACAAACAAAGGCAATTTGATGTTCAAAGACTATGACTTTCTCGGATG
45 TGCTTGAGTTGAACAAACTAAAGAAACAAATTAGATGAGATAAGAGGAGAAAAGAGGAC

ACGTGAAGATTCAACAACCCATTTGTACTTTGTAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 159>:

gnm_159

5 CCCAAACAATGAGCACCCTAATTATTATTGCAATCGTAGAACGAACCATTAAAGACA
TTTTACACAAAACATCTCAGAAAGCAAAACAAGGGAATATTTCAACAGATTTCACAAA
CATTATATAAGTCATCTTCATCCTTTTTTTTGTGCAGAAAGTTAACAGTTCCTTGGTTT
CATAACGATTATGGAGTGGTTAAGGATGTGCAAGCTGAATTGTCCACCTTTCTCACTAGT
10 ATCCACTTTAGACTGTCTGGAGGAGGAAGAAGCTCGAAGTCTGGACCATCCTACCAAT
GGTGATCCCCAAATAGGCAATGCCAATATAATCCCGGGACAGCTTCGACGTCCAACACC
AAATGGCACATACCTGAAGTCATTACCGTTAGCTTCCACGTGCGATTCTTCTTCAAAGAA
CCTCTCTGGTCTAAACTCTTCAGGCTTCTTCCAGCTGTTGGGGTTGTTTGCTAGCCACCA
AGCATTAAACAAGGATTTTGCTTTCTGCTGGGATAwCGTAGCCAGCGAGCTTCGCAtCagG
AGGTTC

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 160>:

GNMCG72R gnm_160

20 CATAACAAGGAAAGGACGAATAATTGTTTTGGAATTTGCATGCATTGAATTCGAGTAC
TCATAATCTTCTAAGCGAAAACCTTGCGAAAACCTTATCACCTATAAAACATTGAAAATAT
TGAAACCAATGGGTGGTCTAATAGTTTTGAAAACCTAATGTGTGGGTCAAAGTCACTAGT
TTAATACTTGAGAGGAATAATTTATGCTCTAAATAATCAACCACAAAATTTTCGATCTTT
CACTCACTCACAGAAAGGAAAACATTCATTGCTAAAGCGTCATGACTCACGTTGCTTGA
ATCCTTAAATTTTTTTTGTGTTGTATGGAACATCCAAAATCTAACATGGTTTATGAAT
25 TAAGTCGCAACTGATTCATTTTATTATGTTTTAGTACTATAACGTGTTACATTTAAGTG
AAGGACATCACATATAAGTATACACAACAAGTTATCTAATCCAAGTCCAGTCCAAGAAGT
TTTTATTTAATCAACAAAAGAAGCAAGGCTTAACATCGAGTTCCTCGACTAAGTCTGTAA
AATCCGCTCAAATCGGAAGTAGACACAATCACACAATGGTTTTTT

30

GNMCG73R gnm_161

35 TAATCTTCTTCCCAAAGTTTCTTGGTTCATCTCCATTAGTTTGTCAAACGATTTTC
AGGTCAAAGGCCTAATGATCCATTTTATTTTCAATTTGCAGTCGAAAAATCCAGTTTTCATT
AGTCATCCTTCTCCTTGGTGTGGAATTGCAACCGTAACAGATCTCCAGCTTAATATGCT
GGGTTCTGTCTTGTGCGTACTGGCTGTTATCACAACTTGTTGCCCCAAATTGTATCCTA
TGCTTATATTCTCTTTCCCTTTCCATATGTCTTCTATTAGCCAGTGGTTCAGCTAAATA
GTAGTCTTTGTTGGAGTCGTTGCTGTTATCTTAACCACTTATATACAGATGACCAATACG
ATCCAGAAGAAATATAAGGTTTCATCCACCCAACCTCTGTTATCAGTCTTGCCCATATCA
AGCAATCACACTTTTTGTTACTGGCCATTTTATAGTGGTCTCTTAACCAACCAGAACGT
GTTTGCTTTCAAATACACGTCTCAAGTTGTGGTGAGAATGAAGCAATATATGTGGA

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 162>:

GNMCG73F gnm_162

GATATATTTCTCTGGTTAAGAATTTGAATGGTTGACAAAGAAACGGTCACTCTATATACT

TAGAAAATATAGTCATACATAGACACCATCGGTCTAGTTATAATAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 163>:

GNMCG78R gnm_163

5 ATATTGCTTCCTCTTGCAATCATAATGTAATACATTGCTAAATGTAGAAAAATATCTACA
AACAAACACCACAGCGATTCCAATACTAGATATTGGTGACTTCTTGAGTATCATAACTTG
TTTCCCATATATCAATTTAACATTTTAGCATTCAAATTAGTTATGAAGTTTCAATTATT
CTTGCTGGAGATAAATTTTATTACTAGGCATAAATCAATCACAACGTGATATGTGCATG
CTTAGTTAATAGAGTATCTATCGAAAATTCGCTTTTTTAAATTAAGTAACGTATATCAT
10 CATCATTATTAAAGCGACAAACGAATTTAGACATTTTACCATCATTACAGATAATTGGT
GATAGACGAATCATACGTTACTTTATAGATAGTATAAAATAAAATTACGCCAACTCGTCT
ATTGCGCTTGTTTTAGTAACATATGTTAGATGAATTGGCCACGTTGAATCTAATTCATGT
GTGCTTTTTGTAGAAAATCGACAAGTAGATAATTTATTCGTCACAATGACCCAAGATTCA
AACCTAATTGAAATAAAACCCCTAGTAGTA

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 164>:

GNMCG80F gnm_164

20 TATAAGTACTCAAATATAAACTCGAGACGACAAAAAAGTTATGCACAAAGAGTATTATT
GATTGTATATGTTTTAAAGTTTTTCATTGTCTACCATGTACTATATGGTGATTCCTTTTT
TGATTTTAATTATAATGTATGTACTACATCTTCTTTATTGGTACATTGATTATTTCTCAA
AAGCAAAGTTCAAAATTTTGTAGTGCACGTTCAATAAAGTTACATTAGTATTTGAATTA
AGGTTGTTTTAAAGGGTTTTCAAACAAAAAACAACGTATGCCGAATTTTCGTTGGTC
TATCATATGGAGAAAAGATCTTCAATTCGGATAGACCAACCCGCCAATAGTTTTGAACAT
TTTGCAAAACATTGCCGATTGTTTTGGACTTTGGGTTTGATAAAGGAAATTCCAATTACG
25 ACAAAAAAAGGAAATTCCAATTACG

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 165>:

GNMCG82F gnm_165

30 CCCAGGACATTCATTTATCAATGTTTAGGATTGGATTGAAGCTCTGCCACTTGGGTTT
AGTAAAAACCACATTGAGATTGCTGGGTAATTGAGTGAATCTGTCACCACATGGAATACT
ATTTTATCCGGTTCTGCAAGCAGTAATATCATTGTTAAAGACATGTGGCTTCAGCAG
AGATTCGGAAAAGAGCATTAAAAACACAAGTTTGGATCGGGAATCTTGCATTAACAAGTT
TAAGATGCTTGCAACATGATTTAAATGATACCTGAGTTTTGAATTAACAAGTGTAAGAT
GCTTGCAATATGGGCATAAGTTTTGAATCATGAAAACATAAAACAATGCAAGGTTTCTC
35 AACTGTAATTTAAAAAAGATAAAGTTATTCCTGAACAAAGAGCACACAAAATGTAAC
TCCTTTTCCTAGTTTCATAACTAGACAATATCCTATATATGGTACTAACCACAGTnGn

35

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 166>:

GNMCG85F gnm_166

40 CCGCAAACCTTCTGGTCCAGAAAATGGTAAGTATATGCTTGTTATGACTTCCAGCAGTCA
TAATTGGAGTCAGTTTATGAACCATTTATTTGCTTTATCGCTCAGAACCATGACATGTAA
TTTCACTTTGCATTTTCTTGTTGTGTCACCTGTTAACGGAAAAAGGAATGCAAGATCT
GGATGCTGATTTTTACAGCCTTAAGGACAACATGTCCGGAGTAGGTAAGGTCGTCAAAC

40

5 CATTATCTATGAATATGGTCCTCTCTGCTCATGTTGTATGTGATAATGCAGGAAGTTCA
TTTAACCATATAGCAGAACCTACTTCTCTAAGAGGCAAGCCAGTTTTCTTTGTTTTGTC
TTTCATATAATGCCACTGCACAAGTTTTCTTTCTCAGCATGTATATCATCTTGGTTATCT
TGCTAACAGAATTGCACATTTTCATAGAAATTTTGATGCTTTACTTTCTTACAGGACTTT
GTTTAGTATCCCTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 167>:

GNMCG87R gnm_167

10 CTCGGAATTCCATTAGTTCATTCCACGGACAAAAACAGAGAAAGGAAACGACAGAGGCCA
AAAAGCTCGCTTTCAGCACCTGTCGTTTCCTTTCTTTTCAGAGGGTATTTTAAATAAAAA
CATTAAAGTTATGACGAAGAAGAACGGAACGCCTTAAACCGGAAAATTTTCATAAATAGC
GAAAACCCGCGAGGTGCGCGCCCCGTAACCTGTCGGATCACCGGAAAGGACCCGTAAAGT
GATAATGATTATCATCTACATATCACACGTGCGTGGAGGCCATCAAACCACGTCAAATA
15 ATCAATTATGACGCAGTATCGTATTAATTGATCTGCATCAACTTAACGTAAAAACAATT
CAGACAATACAAATCAGCGACACTGAATACGGGGCAACCTCATGTCCGAGCTCGCGAGCT
CGTCGACAGCGACACACTTGCATCGGATGCAGCCCGGTTAACGTGCCGGCACGCCTGGGT
AACCAGTTATTTTGTCCACATAACCGAGCGCAAAATGTTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 168>:

20 **GNMCG88R gnm_168**

TTCAGTAAACTTCAGCACGTTTCATCGTCATTGGAAGACATCTCCTGTCACTTATCAGG
TTCTAGGACATCTAAAAACATGCTTAGTGTTAGCATTGGGTATCTTTTGCTGAAAGACG
CATTAGCTGGCGCAACATTCTTGGTATTCTTGTGCGCGTGATTGGAATGGTGCTTTATT
25 CCTATTACTGCACACTCGAAACCAACAGAGGCCACAGAAACATCAACTCAATTGCCTC
AGGTAAATAGTTTCACCTTCCCTTTTGGCACAATGTGACTCAACTTCATTTCATTATATG
CGTAACGAGAAAACAAGAGTTGAGAATTGATGTTGTGAATGTGCTTGTCTCAGATGGAT
GAAAACGAGAAAGATCCGCTAGTTAGTGCGGAAAACGGGAGCGGATTGATATCAGACAAT
GGAGTGCAAAAGCAGGATCCTGTATGGAATTCAAACAAGATTTTCAAGCGTAGAGCTGG
AGCTCGATATCTGAAATCTGTTGTAGTATCAGATTTCATAGGTTTCCGTTTGTCACTTT
30 GATATCTCTCTTAGAGAGAATCTACAGCTTCCCTTTCAAAGGAAGGGGGGAGAGGATTAG
AGGAGGAACAGCTTTTTTGTGATCCATTTTCATATAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 169>:

GNMCG90F gnm_169

35 CCTGAATGTGCATGCAGGGGTCCACTTCCAATAGAGAACATCCTTGGAAGATCTGTGTTT
CGGTACTGGCCACCGAGCAAAGTATCAGACACCATATACCACGACCAAGCTATCACAAGG
GGACCTGTTGCAGTTTCATGACAAAAGAAAGTTGGATTTTCTTAGGATTAAAGCACAAG
ATTGTGCAAAACAGTCTGGTCAGAATTGGGTAGACTTGGAAATTGAAACTCAAACCGTT
ATGATATCTGCAGATACATACTGTATCATCGTTATGGATCGCATCTGGTTCTTAGCTGAT
40 GGTGGGAAGCCGGAGATGTTACGTGTACAAAAGGAATGGAAGATGCAAAAGAAAAGGAAA
CGATTTACTGTGATTGTTATGTGAAAACCTGGAnCAGATACTGTAGTAAAGCCATAA
AGGCAACTGTTAAACAAAAGTGTGATTTTTTGTGTTATGAGTTGTACTATAGAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 170>:

GNMCG91R gnm_170

5 GGAAGCCAGTAAGGATATACGGCAGGCATTGAAGAGTTTCGCGGGGAAGGAAGTGGTTTT
TTATCGCCCTGAAGAGGATGCCGGCGATGAAAAAGGCTATGAATCTTTTCCTTGGTTTAT
CAAACGTGCGCACAGTCCATCCAGAGGGCTTTACAGTGATACATATCAACCCATATCTCAT
10 TCCCTTCTTTATCGGGTTACAGAACCGGTTTACGCAGTTTCGGCTTAGTGAAACAAAAGA
AATCACCATCCGATGCCATGCGTTTATACGAATCCCTGTGTGAGTATCGTAAGCCGGA
TGGCTCAGGCATCGTCTCTCTGAAAATCGACTGGATCATAGAGCGTTACCAGCTGCCTCA
AAGTTACCAGCGTATGCTGACTTCCGCCGCCGCTTCTGCAGGTCTGTGTTAATGAGAT
15 CAACAGCAGAACTCCAATGCGCTCTCATACATTGAGAAAAAGAAAGGCCGCCAGACGAC
TCATATCGTATTTTCTTCCGCGATATCACTTCCATGACGACAGGATAGTCTGAGGGTTA
TCTGTACAGATTGAGGGTGGTTCGTACATTTGTTCTGACCTACTGAGGGTAATTTGT
CACAGTTTTGCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 171>:

15 GNMCG93R gnm_171

TACATAATGCTGAAAAGTTGTACATGTATCAAATTGAAAAATTGATGATGCAAAGTTATA
AAGCAAAACAAAGTAATGCACACTTACCTAATGTGAAATCTAGGTTCCCTTTAAGTTT
ATACGAAATCAAATTTTTTCAAGAATACATACTTACCTAAAGTAAAGTAGACGGTCT
20 TTTGAAATTAGATTTTTCCGAAGAAACCGAAAGTATCTTTGTTAGCCATTAAATCATGT
AGTAACATATCTCTATCCTATCGGTAATGGATGAGGACCAAGAGCGAAGTACCATGTACA
AAATTAGTTCAATAAAGTAAACTTCAATCAATTAATAATCGATGAATTATTATTTTTT
ATATATTAATAATTTTTATGACATAAATGATATAAATCAATAAAATAATTTTAAGAAGT
CATTTTTGAAATTCTATGTAAAC

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 172>:

GNMCG93F gnm_172

TTATTAATTCCTTTTTTTCAGTCTTCATATGCAAATCCGGACCAGTCCCTCTCTAATCGA
AGAAACAAGGATGTTGATGAACCATGGGATTCCAAATTACATCTTTGGAAACCTCTAAAT
30 TTTCTTGTGGATGTGGCAAACGGAACAAAGGACCCAAATCTGAGCTTGAAACGCATCC
CACAATGATGTTACAGGGGAGTAAACCAAAACAAAGGATCATAAAAGAAAGTGTAACCTC
GAGGAAGAGATCAGCAATAACGGTGATCCTACAACATCAGAACTGCTACACTTAAACGA
ACGCGTCGGAATCGTCGCAAAAGGTCATCTACTTTTGGTGATTCTAGAATTCCACTGTTA
CCAGGTGCAGCAAGCCTAAACAGGAGAGGAGAAACGGTCATGTTTGGTTCTCACTTGTA
35 GCGTCAAGTAATCAGTGAGATTCCTGTCTGTATCTGAGACTCTGAGTACTTCTGATATT
CAATATTTTCTGTGTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 173>:

GNMCG94R gnm_173

40 GTCAACCGCATTGAGAGACAATGAAGCCCTTTTGGGGTAGTCTCTGATGCAACTTGTGCC
ACATATGGAAGGTTCTCCGTAATTTTGTGGCATAGTGTGAAGTTAATCAAGAAAAGTC
ATTTGATTCAGAAAGCAGTTATGACCTGAATATGTTGGCTAGTTTAATACTTTCGCTGAC
ACCAACAATTTTTTGTAGAACCTGAAACAAATCTCTTAGTACTACACTCTCTCTTACT
AGTTGGTCACCAGTAAGAGCTTTGTTGGTGGCGAACTTATTCATTTTCTAAAGAACCACT
45 CTTATGTATTTATTTTAGGCCTGACCACATTTTGCAAGACTTGAGAGCCAAATTATTTCC
TCTAAACGTAAAAAGGAGAGAGCGCCTGAAGTTGTGCTCCTCCATCTCATTACCTGCAA

GAGGAAGGAGAGGTCTATCTCGTCTTTGGTGGTAAGCACACCCAAGGTTTCAGCACAAGC
 TGGTACAACAGGAAAAAGAACAAAAGCTGCTACGAGAAAAGATGTAAGAGGTAGTGGTTC
 ATTCACCTAAGAGAACAGTGAAGAAGGAAGAAGAATTTGGAG

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 174>:

gnm_174

GCCCATACGGCAGCAAAATTGCTTTGCGGAATGCTGAAATTGATGTTCTTCAGAATCGG
 GCGGTCGCCATACGCGAAGGCGACGTCTTTCATTTTCGATAAAGGGGGGCAATTGTGGTGG
 10 GCAACAAAGCGATGGGCGTTACACCGAAAAACGAGCGCGTGATTTCCAACGTCGTCATG
 ATGGGCGATGGGCGAGCCGATGGCGAACTTCGACAATGTCGTTACCGCCTTAAGCATCATG
 CTGGACGACCACGGCTACGGTTTGAGCCGCCGCGCTAACCGTTTCCACTTCGGGTATG
 GTTCCCAAATGGACAGGTTGCGCGATGTCATGCCGGTGGCTTTGGCGGTTTCCCTCCAC
 GCTTCCAATGACGAAGTCCGCAACCAATCGTACCGTTGAACAAAAATATCCCTTGAAA
 15 GAATTGATGGCCGCATGCCAACGCTATCTGGTCAAAGCAGGAGGATTTCATCACTTTC
 GAATACGTCATGTTGGACGAATAAACGATAAGGCGCAACATGCGCGCAACTGATCGAA
 CTGGTCACAGATGTTCCCTGCAAGTTCAATCTGATTCCGTTCAATCCCTTCCCAACTCC
 GGATACGAACGCTCCAGCAATG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 175>:

20 **GNMCH55F gnm_175**

TATCCATTTAATGTTCACTTTTGAAATATGTTTTGCTGGTTAAGGAATTTTAGGTGAAT
 ACATGTTCACTATTTTAAATGTGTTTCTTCATTGTATTCTGGCTTGTGTAGTCTCTGGTG
 AGACGCCTACTATATTTGGTATCCTTGCTCTTTTTTACTTATTGTATCTTTCTTATCTTG
 25 CTGTTTTTAAGATTTTCTTTTCTTTTCTTAGACAGAGTTTCACTCCGGTCTCCAGGC
 TGGAGTGCAATGGCATGACCCTTTGGCTCACTGGCTCACGGCCACTTCTGCTATTCTGC
 CGCCTCAGCCTCCAGGGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 176>:

GNMCJ01F gnm_176

CGTCATTATGGATCTTGAATCCTCTTCTCGGCAGGTTGCAATTAGCGAGTGGGTAGTATC
 ACCAACAGCGCGAAATCCGCGTCTGATAATGGATATGTTCTGATATAACGTGTTAGTAGG
 CACACGCATACCTTCTTCTCCAGACTCTGGTGAAAAAATCTTGTTGTGCAACCACATC
 AGGAAAAGCTTCAAGTAGAAGTGATAAACATCGACTGGCTGGCGTTGTCAAGACGACGTT
 AAGATCGGCGTTATGTACCGATATTAATTTTCGGTGCTCAGGCCAGAACTCGATATTATC
 35 GTTAATAATCCAGTACATACGTCAATAAACACTAAATCAATCGAAATGGAGATCACATAG
 TTTGCTAAGTATATTGGTATTTACGGCATAAATATATATTAATTTTATATTATCATGAT
 GATTGAAATGAGGCTTTAATGTTGCAACGTAACCTTTACGTAAATTAACATGGTTAACA
 TTTATGCCACTATTGTTTGTAATTCATATTTCTGAATGCTTCTGAATTTTTCGTGTGAT
 GGTTTTTAAATACTATGGTGTCTTCTGAGGGGACGGCCTATTTATAAAATACGGACAT
 40 TTCAATAAATGCCGTATAAACAGAGTATGATTCTGGCTGGTTCGTTGAGTATCAATGTTG
 GACCGAATGTGAACGAGTAAATAAATTCGGGTATTTACCACCCATTCTCTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 177>:

GNMCJ02R gnm_177

GTACCCCATCTCTCAATAGCGTTGCCGGGCGTCACGATATGGACAGCCTCGCGGAACGATT
GGTTGAAGCACAAAACCATCACTTTTGAAGAGATTGCTGGTAAAGGCAAAAATCAACTGA
CCTTTAACCAGATTGCCCTCGAAGAAGCCGGACGTTACGCCGCCGAAGATGCAGATGTCA
5 CCTTGCAGTTGCATCTGAAAATGTGGCCGGATCTGCAAAAACACAAAGGGCCGTTGAACG
TCTTCGAGAATATCGAAATGCCGCTGGTGCCGGTGCTTTCACGCATTGAACGTAACGGTG
TGAAGATCGATCCGAAAGTGCTGCACAATCATTCTGAAGAGCTCACCCCTTCGTCTGGCTG
AGCTGGAAAAGAAAGCGCATGAAATGCAGGTGAGGAATTTAACCTTTCTTCCACCAAGC
AGTTACAAACCATCTCTTTGAAAAACAGGGCATTAAACCGCTGAAGAAAACGCCGGGTG
10 GCGCGCCGTCACGTCGGAAGAGGTACTGGAAGAACTGGCGCTGGACTATCCGTTGCCAA
AAGTGATTCTGGAGTATCGTGGTCTGGCGACGTGAAATCGACCTACAGCGACAAGCTGCC
GCTGATGATCAACCCGAAAACCGGGCGTGTGCATACCTCTTATCACCAGGCAGTAAGTGC
AACGGGACGTTTATCGTCAACCGATCCTAACCTG

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 178>:

GNMCJ02F gnm_178

CCTGACTGACGGAGACGACCGCTTTGACTAATTTGAATTATCAACAGACGCATTTTGTGA
TGAGTGCGCCTGATATTCGCCACCTACCTTCCGATACCGGAATTGAAGTGGCTTTTGCAG
GCCGTTCCAACGCAGGTAAATCCAGCGCGTGAACACGCTGACTAACAGAAAAGCCTGG
20 CTCGTACCTCAAAAACCCAGGGCGCACCCAGCTTATCAACCTGTTTGAAGTGGCTGACG
GCAAGCGTCTGGTTGACTTGCCCTGGGTACGGTTATGCGGAAGTCCCGGAAGAGATGAAGC
GCAAATGGCAGCGTGCCTCGGCGAATACCTCGAAAAACGTCAGAGCCTGCAAGGTCTGG
TGGTGCTAATGGATATTCGCCATCCGCTGAAAGATTGGATCAGCAGATGATTGAGTGGG
CGGTAGACAGCAATATCGCCGTTCTGGTGCTGCTGACCAAAGCGGACAACTGGCAAGCG
25 GCGCACGTAAAGCGCAATTGAATATGGTGCGTGAAGCTGTACTGGCGTTTAACGGTGATG
TGCAGGTTGAAACGTTTTCTTCGTTGAAGAAACAAGGCGTGGACAAGCTCGGGCAGAAAC
TGGATACCTGGTTTAGCGAGATGCAGCCTGTAGAAGAAACGCAGGACGGCGAATAATTTT
CTTGCCCTTAATGCTTGTGCCGATGTGGCGTATCCGCCCGTAAATTCA

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 179>:

GNMCJ03R gnm_179

CCCTCCCTAGTAGCTAGGACTACAGGCACACATCACCACATCAGGCTAATCTTTTAATTT
TTTTGTATGGGGGGGGGGTCTCACTACATTGCCAGGCTGGCCTTGAACCTCTGGCCTC
AAGCAATCCTCCTTCCCTCAGCCTTCCAAAATGCTAGGATTAGAGGTGTAAGCGACCACAC
35 CTGGCCAGCAAGGTGGGATATTTTAAACAGCCAAAGTATTTCCAGTTCCCTCAAGGGCC
TTCATGAAAAAACAATTTAAGTCCAAACAGAATTAATTTTAACTCACTGTAGTTTAATAA
TGAAGCGCACCGTATAAGAATTTTAGAAGGAAAGTCTGTGCCTAATTAACCTCTGGCAAT
AAAGACAGAGAAGTCTGAAGGTAGAGAGGCTTTCTCATGGTTACCCAGTGTGAGACTCTG
ATTCTGGAGACCACAATTATGCACCAGGCAGAGGGAATTCTACTATGCATTTGAGACTT
40 TGATTATGATGTTGTATAATGGACATTATGCACAAATCTCAGAGCTGGATTCCAGGAAAA
GATTGATTGGCATTCCCCATCCTCCAGCCCCATCTGCTTCCGTATGTATTCCCCACACC
GAGCTCATTCCCGTCTCAGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 180>:

TCAGCTGCGACATGAAATATCGCTCGCCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 183>:

GNMCJ05F gnm_183

5 CCCAGCTACTTGGGAGGCTCAGGTGGGAGGATCACCTGAGCCAGGGAGGTTGAGGCTGCA
GTGAGCCATTACTGTGCCACAGCACTCCAGCCTGGGTGACAGAGCGAGACCCCATTTAAA
AAAAAATAGTCTTTAACTAATAATAATACCACTACCTTGCATCTGTAAAGGGCCACCT
10 TTTCCAAATTTCCCCTTCATATGCCAAGCTGTGTAAGAAACAACCTCTTTGAGATTTTAG
GGCAGCTACTATTGATTCCACTTTACAGCAAATCTGAAGCCAAGGCCAGGCGCGGTGACT
CACGCCTGTAATCCCAGAACTTTGGGAGGCCGAGGTGGGTGGATTACGAGGTCAGGAGAT
CAAGACCATCCTGGCCAACATGGTGAAACCACTCTCTACTAAAAATGCAAAAAATAGCTG
GGCGTGGTGGCACATGCCTGTAATCCCAGCTACTCGGGAGGCTGAGGCAGGAGAATCGCT
15 TGAACCCAGGGAGTCAGAAGTTGCAGTGAGCCAGGTCGTGCCACTGTACTCCAGCCTGGC
CACAGAGCGAGACTCCGTCTAAGAAAAAATCTGAAGCCAAAAGAAGAAAGGT
CACATTTCCAAAATAAGCATAAGAATTTTATCTCATCTAAGCAAGAGACTCTGTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 184>:

GNMCJ06R gnm_184

20 ATGGCTTGACTACATTGTGAATATATAAAAAATCCATTGAATTGTAACTTTAATGGGT
GAATTTTATGTCAATTAAAGCTATTTTTTAAAAAAGACCTATATGAAAACTTGAATTTT
GGGAGTTAGTTGTATTAACCAGGCCCTATCCAGTCTTTTTTCAAATTAGAGAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 185>:

GNMCJ07F gnm_185

25 CCGGAAGAAAGTGAACCTCTGAGTAGAGCAGGGGAACACCGAAGATGCTCCAGTGCAGATC
AGGAAGGAGCAGGGGATGAAATGTTACAAATTCTAGAATCAGAGAGCTGAAGGTAATTA
CTTCCTTTTCAAGTTGTGAAACATGTTAACCTGTGGTAAAATACTTATAAGATGATAATT
ACCATCTAACCGTGTTGAAGTGACAGTTCAAGTTGTGTGAAGTATATTCATGTCATTTTT
30 TTTTTTGTTTTTTTTTTTGAGACGAGTCTCACTCTGTCAACAGGCTGGAGTGCAGTGGTG
GGATCTTGGCTCACTGCAACCTCTGCCTCCTGGGTTCAAGCAGTTCTCCTGCCTCAGCCT
CCCGAGTAGCTGGGACTACAGGCGTGCATCACCATGCTCAGCTAATTTTGTATTTTATAG
TAGAGACGGGGTTTACCATGTTGCCAGGATGGTCTCCATCTCTTGACCTTGTGATTCA
CGCCTCGGCCTCCCAAAGTGCTGGGATTACAGGCGTGAGGAACCGCATCTGG

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 186>:

GNMCJ09R gnm_186

40 CCATGACAGGTCCTTTTTTCTGTCTGTATACAAGATTAGGGGAGTGTGTTGGTGGGAATA
GTCTGCTCTGATGAGGAGGCAGTCATTCTGGTGTCTGTTGCTGCGTAATGTGGGAAC
ACATTTTGTCCAGCACTTCTGGATAAAACACAAACCAGGCTCGACAACTCCCCAGT
GCCACATCACTTGTTTCAAGAAAGATAGCTGAGGCCGGGTGCAGTGGCTCACACCT
GTAATCCCAGCACTTTGGGAGGCCGAGGAGGTGGATCACCAGGTCAGGAGATTGAGACC
ATCGTGGCTAACATGGTAAAACCTGTCTCTACTAAAAATACAAAAAATAGCTGGGGT
GGTCACATGTGCCTGTAGTCCCAGCTACTCAGAAGGCTGAGGCAGGAGAATGGTGTGAAC

-657-

CGGGGGGCGGACTTGCACTGAGCCAAGATCGCTCCACTACACTCTAGCCTGGGCGACAGA
GCGAGACTCTGTCTCAAAAAAAAAAGAAAGCCAACCTTCAATCACTTCAGCATCCTG
GACAGTTCCGAGCACATTGCAGGCATAATAGCTGTTTGAGGGCAATAAATAGCAGTCCTC
AAAGCCATTGAGCAAATACCTGCTTCCCCCTCT

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 187>:

GNMCJ09F gnm_187

CCGAATCCTAGCTAGATTTGTCCGCAACAATATCTGAACCCCTGGCCTCTTGAAAAAA
AAGAGAGAGAGAGAGAATATAAATGTACTATACAGGGTTAAATTGACACTTCCTTCTTG
10 AAGTATTTAGAACTACTAATGGAGAGTTGAAAAGGGAAGCATGATTTCTCCCTATGTGG
CAATGTTGTTAATGCAATGCAGGACAGCTTCCAGTGCTTCAAGTCTTCCACCTCCTGA
AACACTGATGTGGAGGGGGAACACAGGCCTTAAAGATCAGAGGCCTGAATTCGAGCCCC
TGCTCTGCCACATACTTGCTGTGTACCTTGAACAAATTACACAGCCTCCGTGGGCTTTG
GGGATAAATGTGAGACGGCATAGAGAATCATCTCTCTGCTGACTGATTCTGATCCTTT
15 GGTGTTGACTGCCTGAGCACCATGTGATGAGCTCTGTGAGGGCTCCATGGAGGGAAAATGC
AGTCATCTATTGGTGATATCTGCTATGGACAACATGAGTTGAAATTCTGCCAGCCAGAC
TATGTCTTCAAGGACTGTGAACAAGGTGTCTTCTGAAGTCACTTCCAGATCAAAGGACTT
GGTGACTCGTTCCAATGGGACTGGAATACGAGAGGGACTCTATATCATCATGGTTATTTT
CTAAAGGCCCTGAAGAATCT

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 188>:

GNMCJ10R gnm_188

CCCAGGCTGGTCTCGAACTCCAGACCTTGTAATCCGCCTGCCTCAGGCTCCCAAAGTGCT
GGGATTACAGGCATTAGCCACCGTGCCTGGCTTTTGGTGCTCTTCTCGTTTAGTCCACAC
25 TCCTGGCCACTTCCCAAGATGCAAACTGGCTCACAAGGATTGGATTAGGACCCATTCCAA
TCAAATAATAATAACAAACATTTGTTATTTTGGCTTCTGGATATTAATTTTAATTACT
TTGAAACAACATAAATTTACTACCAGATGTTTAAACAAGCACCCATTATAATTGCTAACTG
TGAATTTAGTTTTAACTGTGTCTGACCAACTATACAAACTCATCAATTTTAATTTTGAC
AAAAGGTAGTAGGCTGGGCATGGTGGCTTATGCCTGTAATCCCAGCACTTTGGGAGGCCA
30 AGATGAATGGATCACTTGAGGCTAGGGGTTTGAACACAGCTGGACAACATGGTGAAACCT
GTCTCTACTAAAAAAGAAAAATTAGATGGCCATGATGGTGCACACCCGTAATTTAGCT
ACTTGGAAGGCCGAAGCAGAAGAATTACTTGAACCCAGGAGGCAGAGGAGGTTGCAGTGA
GCCGAGATCATGCCACTGTACTCCAGACTGGGCTGAGCTACAGAGCAAGACTCTGTCTTA
AAAAAAAACAGGCCGAAAGT

35

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 189>:

GNMCJ10F gnm_189

CCGGTATTAGGAAAGAGACAAACCACTTTGTCTGGGCTGGGAGGGAACAAAACCGTCTC
CCTCAACTCCCTAAAATCAAATTCAGAGAGGACTGTCAAGGTGGACCCATGGAGCCCCAG
40 TCAAGGTCCAGAAACAAGGATTCAAAGCCTTCAACATAAAGTCACCACGAGGCTAGAAGA
GACCAGATGAATGGGCTGGCTGGTACCTGAGTCAGAAAGTGGGAGTGCCTGGGCATTGG
TCATGGTGCCATAATGGAGACAGTGAGCACAGGAGTTAAACAAGATGGCTCTGAGGCCAG
GTGCCCTGGGTTCAATCCCAGCTGCGTAACCTTTCACGTGGCCTTTTCCAGTCCCTTACA
CACTCTGTACCTCACATGAATGAAGTGAAGTGAAGTACAGCACTACTGACTTCAGA
45 GGATTGTTGGATTAAAGTTATTAATTCACCTTAGAACACACCTGGCACATAGTAAGTGTT
AGTAAATGTTTGTATTCCACACCCTCCCTCCCTTGGCCCCGCGATGGAGGAAGCAGGCT

AGGACCAGCCCTCGGAGCTGCAGCTGCCCTTCATCCCTCCCTCGGCCTCTCTAACGAGAT
CCTGCTCCAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 190>:

5 gmm_190

AAATTTACTCAACCATTCTGGAAGACAGCGTGGTGATTCTCTCAAGAATCTAGGACTAGAA
TTACCATTTGACCCAGCAATCCCATTCTGGGTATGTACCCAAAGGATTATAAATCATGC
TACTATAAAGACACATGCACACGTATGTTTATTGTGGCACTATTACAAATAGCAAAGACT
TGGAAACCAACCCAAATGCTCTCCATGATGGACTGGATTAAGAAAATGTGACACATATAC
10 ACCATGGAATACTATGCAGCCCTAAAAAAGGATGAGTTCGTGTCCTTTCAGGGACATGG
ATGAAGCTGGAACACCATTCTCAGCAAATATCACAAGGACAGAAAACCAAACACCGC
ATGTTCTCACTCATAGGTGGGAATTGAACAATGAGATCACTTGGGCACAGCAAGGGGAAC
ATCACACACCGGGGCTGTTGGGGGGTGGGGGGAGGGGGTGGGGATAGCATTAGGAGATA
TACCTAATGTAATGATGAGTTGATGGGTGCAGCAAACCAACATGGCAGATGTATACCTA
15 TGTATCAAACCTGCACGTTGTGCACATGTACCCTAGAAGTTAAAGTATATTAAAAA
AAAACCTTCCCTTTCTTGAATGTAATTTGGTTCAACCATTGTGGAAGACAGTGTAGCGAT
TCCTCAGAGATCTAGAACTAGAAATACCATTTGACCCAGCAATCCCATTATCGGGTATAT
ACCCAAAAATATATAAATCATTCTGTCACAAAGATAAATGCACACATGATCATTGCAGCA
CTAATCACAATAGTAAAGACATGTAGTCAACCCAAATGCCCATCAATAATAGACTGGATA
20 AAGAAAATGTGGTACATATATACCATGGAATACTATGCAGCCATAAAATGAACAAGATT
ATGTCTTTTGCAGGGACATGAATGGACCTGGAAGCCATTATCCTCAGCAAACCTAACGCAG
GAACAGAAAATGAAACACCCCATGTTCTCACTTGTAGTGAAGCTGAACGATGAGATCA
CATGGACACAGGGAGGGGAACAACACACACTGGGTCTATTGTGGGGTGGGGTGGGGGA
GGGAGAGCATTAGGAAAAATATCTAATGCATGCTGGGCTTGATACCTAGGTGGTGGGTTG
25 ATAGGTACAGCAAACCATGGTACACGTTTACCTATGTAACAACTGCACATCCTGC
ACGTGTACCCAGAACTTAAAAATAAAAAATACCCCAAACACACTCCTTAGGTATATGT
AACTATTTTCCCGGTAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 191>:

30 gmm_191

GTAACCAAATTCGAGGATTGTGTCTAGGACTTGAAGGGCCATAGGCATTGCAACCACCG
CCAACTCCCTCCTTTTACTAATCGTAGTGCTTTATGGCCATAAAGCACTCTTTCTAAATC
TAAAAATGATTTAGAAGAAGGAAAAGACCAATATGATGATAACAATGTGGGAGATTCTT
35 TTATCTTTTGTAGCCAAATGACAGTAAGGAAAACAGACAGTATGCTGACCTCATCGTTTC
TCTAGGTTGCCAGTTTTTTTCACTAAGATGTATATAAATGAAACCCTTTTGCTCTGCAGG
CTATTATACTATTCTTTTAAATTCAGCATCTCTCCCTCCTCCGTTTCATGCAGATTGTG
GAAGAGAACATCATTGGGAGAGAGAGTTTATTGGTTACTGCTCACCTGAGTAAGCAGTAA
GCCCAAGTGGCAGAAAAACCATTCAAACTGGCTTGAAGCAAAAAGGGAATTATTGGAAC
ATGTAATTGAATAGTTTTAGGTGTAGGGCTGACTTCAGACGCAGCTGGATCCAGAGACTC
40 AAATGATGCCATCAGAAACATCTTTGGCTCTTTGTCTTATATGCTGAAAACCACTGAATT
GTGCACTTTATTTATGTAATTTTTTTTTTTTGGAGACAGAGTTTCACTCTTGTGCCCAG
GCTGGAGTGCAATGGCCCCATCTCGGCTCACTGCAACCTCCACCTCCCAGGTTCAAGTGA
TTCTCCTGTCTCAGCCTCCCAAGTAGCTGGGATTACAGGTGCATGCCACCACGCCTGGCT
ACTTTTTGTATTTTTAGTAGAGACAGAGTTTCATCATATTGGTCAGGCTGGTCTCAAACT
45 CCTGACCTCAGGTGATCCGCTGCCCTGGCTTCCCAAAGTGCTGGGATTACAGGTGTGAG
CCACTGCACCCGGCCCAATTGTGTACTTTAAATGGGTGAATTGTAAGGTGTGGGAATTAT
ATCTCAACAGAGCTGCCCCCACTTCCCAAAAAGGACCAAGAGGTGAGGAAGTGGAGAC
AATAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 192>:

gnm_192

```
5 CATGTCAAAATCCTAATCTCCAAGGTAATGGTATTAGAAGGTAATCTTTGGTAGGTGAT
  CAGGTCATGAGGGTGGAGCCCTCATGAATGGGATTAGTACCCTTATAAAGAGAACCCAG
  AGAGCTCATTGCTGCTTCTGCCATGTGAAGATACAGTGAAAAAGAAGCAGGCCCTTGC
  CAGATACGAGTTTGCCAATGCCTTGATCTTGGAAATCCCAGCCTCCAGAACTGTGAGCAG
  TAAGTTTCTATTGTTTATAAGCTACCCAGCCTATGGCATTGTTGTTACGGCAGCCTGAATG
  GACTAAGACAGTCTACCTAGACCATTATTTCCCTTTCATCATCCACCAGCCAATTCCAGC
10 ACATCTTTTAGATCTCAGCTTAAATACTCCCTCCAAGACCTCCCTCTATCTCTAATATGA
  ATGAAATCCATATCTCAAGTTCTTCACAGAATCCTCTACTCTTTCCTTCATGGCATTGT
  CATAATTTGTAATTATATATCTAGCAAAGTTCTTGTGTTAAACATCTACCTCCTCCAC
  TCTCCTAGAACTCCACAAGGACATCCCTGCACCCAGTGCCTAGGCAATGCCAGACACAT
  AGCAGATGCTCCATTAATTATCTGTGCAATGACTGAATGGCTTCCAAGTTAGTTAACTGG
15 GCACCCCTGATAACAGATTCTGCCTATTTGAAGGATCAAAGAAGAAAGTGGTGCTACCT
  TCTCCCTGCCACTATCTTGCCCACTTGTGGTGCCAGTTCCAGGAGGTTTGAATGGATGT
  GGCTAATGATAGACGTAGACCTATTGCCTTCTTGGATCATAATTCTGCCAGGCTCTGAG
  TCCATGTGGCATCGATGGCTAATTGTCCTCCAAATTTATCCTCTCTTCTCCATTTATA
  CCCTCCCATGGAGTTTTAACAGGGCATGTGGTGACCCCTACTGGGATCTCACTTCTCAGCT
20 TCCCTTGCACTGGATGTGGCCTTGTGACTAAATTCTCATGAACAGAATGTGAGTGCAAG
  TGATGTGTCAGTATCTTCATCACTTTCCTAAAAAGGGAAGTCTGGTCTCCACTTCCTC
  TCTTTACCCCTTCCAATGAGCCAGAACATGCATGTGATGCTGGTGAGTCAGTTTCAGTCA
  CATGAATAAAAAACAACTCCAGGAGATGACTAAGCAATAAGACAGAAGGAACCCAAGTCC
  CTAGACGAGTTCACAGAACCAAGCTACCTATCCAACCCCTGGGCCACCTGGATTATAACA
25 TGAGAAAAACATAAGTCCTAATCATATTTTTGAAGCACTGCATTTTAGGGCTTCTTTGTG
  ACAGCAGCCTACCCCTCTAGTCTAATCAATATACCTACCAAGTCTCCTGCTCCTAAGGGA
  GACAAAGAAGCAAAATGAGTCTCAAAACATCATCCAATGGAATAGATACAGACCTGTAA
  TCCCAACACTGTGGGTGCCAAGGGGTGGATCACTTGAGGTCAGGAGTTTGAGACCAA
  CCTGGCCACATGGCAAAACCCCTGTCTCCACTAAAAATACAAAAATTAGCCGGACGTGGT
30 GTTGTGCACCTGTAATCCACCTACCCACGAGGCTAAGCCGGGAGAATTGCTTGAACCCA
  GGAGGGGGAGGTTGCAGTGAGCCGAGATCATGCCACTGCACTCCAGCCTGGGTAACAGAG
  TGAGACTCTGTCTCAAAAAAATAAATAAAAAATAAATAAATAGACCATTAATTAATAGA
  TATAGCCTTGGTCTGTGACCAAAGCTCAGAATGTTATGATATTCTTTTCTATGTCACCT
  CAACTTGCCCTGTCTCAGACAGGACAAATCCCCACTGGTCTTTGCACTCACAGCTG
35 TTACATTTGAAATGGGAGCTTAGCCTTCCTGCCCTGGTCTCTCTTAGACTCATTGGG
  AAAACAGGAACGTAATTATTTCTGCCATTACCTTTATCTCATGGAGCCTGACAGAGTGT
  AACCAATGGTAGGAATTAACACTCTAATTGCCAACTCACAACAACCTCCCGAAAAAAT
  CATTTTAACCTATTATACATATTAAATTATGACATGCTTAATGTCAAACCTAATAGATT
  CAGTACTCAGGAAATCCCTTATACAGGTAGACACGGGTAC
40
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 193>:

gnm_193

```
45 CTTAGATTAATGGGCAAAAAAGTTACAATCATGGGATGTTTGGCTTCCCTATAAAGACTA
  ATGTTTCATAGATTGTTTTTCAAAATGAGGACTCCCCACTAAATGGGTCCAGCTACACAC
  ATGGTCTGCAACAGACTCAGATAAGGGGGACCTGAAGGCTAAACTCTTAACACTTTTC
  TCAGTTCTAAATTTCTTCTAAGGGGAGTAGAGGAAGTCACACCCAGGCCAGAACTAAC
  ATTCCACTGATCTCAAATTTTATAGACAAGGCTTCTCCTCCTAAGCCAATTACAAATCAAW
  ACATCTTTAAATCTACCTTTGACCCATGGGTTCCCACTTTGAGACGTCCTGCCCTTTTAG
  GTCAAACCAATGTAGAGCCTCCCATATATTGATTTATAACTTTGCATGTAACTCTGCCT
50 TCCTGCAATTACAAATCCTTACCTATAAGCCATCCGGGAGCTTGGGACTTAAGCATTAAAC
```

TAATTATCTTTGCTTGGTGCCCTCCAATAAATACCCCACTTCCTCTTGCTACAATCCCA
ATATCAATGTTTGGTTTTGCTGTGCTGGGCAGGGGACCCAAGTTAGGTTTCAGTATCAGC
AAGAAGGCAAGACAGAGTGTGTGCTAGCAAGACAGAAGTCCGTGTGTTTGGTAACCTAAT
CTCAAACCTGAAATGCCATCACCTTTGCTGTGTTCTACTGATTAAAAGCTAGTCACCCATA
5 TGTTCAATTGCAGCACTATTACAAAAGCAAAGACATTGAATCAACCTAGGTGCCCATCAA
TGGAGAATTGGAAAAAGAAAATGTGGTACATATATACCATGGAATACTACACATCCATAA
AAAGGAACAAAATCATACCCTTTGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 194>:

10 **gnm_194**

CCCTTTTCTCGGTGGAATGTGCTTCTCCTTCATACATGATATAACTTGATTTGAACAATG
TCACAAAGATATTTTCTCTGTAGATTAAAATTTGTTTGCATGAATTTTCAATAGCTT
TAAGCAGTTGAATAGCAATATATGCAGGAAGAAGCTGAGAGACTTATGTAATAGATATTT
CATGTATCTATAACCCACACTGCTGCCAGGAAATGTGCGCTGCATTAAATAGAGAGGATT
15 TTTTCTGCTGAATACCTTGAGGAGTTGGCCAAACACGTTTGGGAGTAGAAGTAGAAAGGG
CCAGGTGTGATGGCTCATGCCTGTAATCCCAGCACTCTGGGAGGCCAAGTGGGGAGGATT
GCTTAAGCCCAGGACTTTGAGGCCAGCCTGGGCAACAGAGTGAGACTCCATCTCTAAAGA
AAAAAATCATAAATTAATAAAATTCTCTGCCAAAATGGACACAGAAAAAATGACAAATC
CAGAGAAAGATAATATGCAATGAAGCTAGACATGGCCAAATTAGAAAATGATATTGAGAG
20 AGAACAAGAGCAAGAAAGAGGAGCCCTCAGCATTGAGAGGGCTGAGGAAGCACAGAAATG
ACTGATGGGTGGTTAGTTAGTTACTTTTTGTGAAGTGTGCAATGTAAATTTCACTTGG
TCTCCCAACCGGAATCATCAACTAAAGTCTACACTGCTATATCGGCTATCTATTGCTGTG
TACAAATTATTCCAAACTCAGTGGCTTAAACAACACATTTATTATCTCACAGTTTCTGT
GGGTTAGGGATTCTGAAGATGGGCCCTGCTTCA

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 195>:

GNMCJ15R gnm_195

CCAACCAACATGTACAGTATCTCATGTACACAGTCTTCTAAGGATTGACACTGAGGTTGC
TTCTGGATTTTGTCAATTACAGATAGTGCTGGATACAAATCTTGCAAATATACCTTGCA
30 CGCATGCATGAGAATATCTGGAGAATAAATCCTAGGGTCTAATTGTGGGTCTATTTAAA
TTTTGCATAAAAAATTTGATACATGTTTTCTAACCACCTGCTCCTCCCAAGAGGTTGCACC
AGCTTACAGTCCCAACATCAGGAAGAGGGATTTATTTTTTTTTTTTTTTTTTTGGG
ACAGGGTCCGGTCTGCCACCCAGGCTAGAATACAGTGGCGTGATCATGGCTCATGGCAA
CCTGGTCTTCCCCAGTTCAAGCAATCCTCCCGCTCAGCCTCCCCAGTAGCTGGGATGAT
35 AGCCGCATGCCACCACACCCAGCTAATTTATATTTTACTTTTTGTAGAGACAGAGTCTCA
CTATGTTGCCTAGGTGGATCTTGAATTCCTGAGCTCAAGCGATCCTCCCACTTTAGCCTC
CCAAAGCTCTGGGATGACAGGTGTGAGCCACCATGCCCTGCCTGAGAATTGTCTTCTCAC
ACCCTTGTTAATAGGACTATTATCACATTTTAAA

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 196>:

GNMCJ16R gnm_196

GTACCCGTTTCTTTTGGTGCCAATCTTGAGCGCGGTAAACCAGCTTCTCCGCGCTCTTC
ATAGACCTTCAGCCACCTGGCTACAGAACCCTACCAGCAAGCATAAAGTGAGCAGCAGC
CTGATTAAGGGACATGTGCTGCTCGATCACAGCTTTCACGACCTTAATACGCAACTCTGG
45 ATCAGCACTAACGCCTTTAGGTTTGGGAATTAACCTTTTTCTCCATGTTTTTCATAGAG
GGCAACCCATGTCTGACCTGGGTTCGGGGGACACCAAACGTGCCGAGATGATCCTGTA

ACCATCATCAGTTGTGAAGTAGTGATTACGACTTCAAGGCGCTTTTCAAAGGGTATTT
TGGCTTTGACATATTAGGGGCTATTCCATTTTCATCGTCCAACAAATGGGTGCAGTACAC
TGGAGGGCTATCAGTACACTACCTTTACGCCCCCACCCTCGCGTCTCGGAAGCCTTAAT
GAGCGCCCTGGCGAGACCCGCGAGCAAGGCTACGCCCTGGACAGCGAAGAGAACGAGCAG
5 GGCGTGCGCTGCGTGCGGTGCGGTGTGGAACACGAGTCCCGCGTCATCGCCGCCCTGA
GCCTGTCGACGCTGACCTCCCGCGTGGACGACGCGGAGCTGGCTAATTTACGCGAGCAGC
TTCAGCAGGCCGGGCTCGCGCTCTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 197>:

10 GNMCJ16F gnm_197

CCTGGATCTAGGCGTACGTCAACTATTCCGCCAGCAGCAGCGTGCAGCCGTTGAGGTGC
TCACCACCATCAAATTTCTGTTCTGCGTGGTGCCGGTGGTGCTCTACCGGGCATGTTCA
TCATGCTGTGCTCTACAAGCTACCGATGCCCGCGTGGAGGCCATCAGCCGGCAGCTGA
TTAAGCACCGCGCGGCGCAGGGCGAGGCCGTTCCCGACGCCGCGACAGCGCATCCATTA
15 ACCGGAGGCAATATGGAATCACTAACCCGATACTACCGGCTTCAACCCGGACCCGTC
CTGTGCCGCCAGGGCGAGGACTACTACATCGCCACCTCGACCTTCGAGTGGTTCCCGGGC
GTGCGCATCTACCACTCCCGTGACCTGAAAACTGGTTCGCTGGTCAGCACCCCGTTGGAC
CGCGTGTGATGCTGGACATGAAGGGCAACCCGGACTCCGGCGGCATCTGGGCGCCGTGC
CTGAGCTACGCCGACGGTAATTTCTGGCTGCTCTACACCGACGTGAAGATTGTGACTCG
20 CCGTGGAACCGCCGCAACTTCTCGTCAACGCCCTCCATCGAGGGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 198>:

GNMCJ17R gnm_198

GTACCGCGGATTATTGTTGGTTAATGCTGGTGTCCGTAAGTGAACCACCAAGTTGCCATGT
25 CTGAACTTAATAAATCGCTGATCGACTTGGCGTACGATTGCACAATCACCAGTACGCC
AAACATGGCGGGCGTCATCCCTTACCGGCACACGAGCGCCAACAGACCAGCAAGGC
GCTCAGACATTAAGTGGAGCCTAACAGGCGCTATTGCGAATAATGGTGCAGAACGCGCC
ATCTGCAAACCAATGTTTGTATGTTAAACCCGCCAATTCAGCCTGACCTTATCGTTGATA
GTAAAAGTATCCCGCAGCCTTAAGTTAACTTCGGCGGTGAGAAACGATGGCAACCAG
30 AGAAACCGCTTCTGTGCTGTTCCAGCACTTCGCTGTAGGGCGCTCTGGAATCAATCTC
AAGAATTTTTGTGCGTTATAGCCAATCTTCGACATGACACCGATTTTGTCTGCAGCTC
GGCATAGTCATGGTCAGGCTTGGGGAGATGGCAGTCTCAATATCAATGCCAGGCGAAT
AATTAATTCGGGCGATATTGCGCCATTTGTTGGTATAACGCCGTTTCGCGCTGCGCCAG
AAACATGCTGATTTTCCCGGTGCGACGTACGACGCCAATCCCCGGTCCATCATAATAAAA
35 GCCCGAATTTACAGCTGCGGGAAGCGATCGCTGACCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 199>:

GNMCJ17F gnm_199

CCGGATTTTCCCATCAACGGTAATTTGTCACTGCACGACCGACATTTCCGGCCTGTTTT
40 CCTAAATGAACCTTTTCGGCAGCACCATATTTTTGACAACGGTAATAAGATGTCACAC
ACCGTTGACTTGCTGAACCATCGCTACCAATAACGGCAATTAATGGAGGTGTTATTGAC
TGCATGAATATATCCTTTAATTTAAATATCCATTAAAAATATTTATTTGGTTAATATGTT
TTTATGAAAGCGTAATTCAGGTCAATGTCACAATTAACCATTTGTCACAATAAGGTTGAAC
GGATATTCTGAGCACGGACCAGTAATATTCAATACATTATTTACTGCCGGGTTTTTCGT
45 GAATCAACGTAATATGTCAATAATTAATTCACGCCAGGCGTGTTATTGCCATTGTAGGA
TGTGATGGTTACGGTAAATCGACCCTCACGGCAAGCCTGGTAAATGAACTGGCAGCAAGA

ATGCCAACAGAACACATTTATCTCGGGCAATCGTCCGGGCGAATTGGCGAATGGATTTCAC
CAGCTCCCTGTTATTGGCGCACCTTTGGGCGTTATCTGCGAAGTAAAGCGGCACATGTG
CACGAAAAGCCCTCAACACCGCCTGGCAATATTACTGCACTGGTTATCTATCTGCTTTCC
TGCTGGCGGGCGTACAAGTTTCGCAAAATGTTGTGTAAAAGCCAGCAAGGCTTTCTGCTC
5 ATCACCAGCCGCTACCCGCAAGTTGAAGTGCCGGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 200>:

gmm_200

10 GTACCGGGCGCTACCTGGCTCAAGTCCGAGCTGTGAACACTGTACGATCGCACTGACAAA
CTCATAGTGTACAGTTTCCTAACGCCGGAACCTTACGAATTTCTGTGGTGGCGATACGG
ATCATACGTTTCAGCCGTCATATGGCGTGGAAGAGCTGCTGCCAGTTGCTCTTTCATTGAT
GGCTGGTTAATAAACTAATCACGTCGCTATTTTTAACTGCTGCTGGTGCACGGTTTCCC
TGAGTTTTTTCAGATCGGCTTTTTCGATTGGTGGTTGCTTAGTCATTGTCATATTCCTT
AGCCAGCGGGGCGAGTGATAATGTCTTAATAGCTGGCCATTTCATCGGTATTCAGGCAGTC
15 AGACAGGGTTCGAGATTGCGGTGATATTCCTGTTGACCTGCCAGTWTGCTTCTTCGCC
CATCATGAAAATTCAACCGGATAACGTCCGCATTCAATAGTTGTGCTGGCAACCAGAAA
AACGAAAGTTGGCTGCACTCCAACTGTGCTTCATAACCGTCACTGTAGAATGCATCCTG
AACGTGATAGCGGTAGTCGTAATAAGCGGTTTTGAATCGTTGAATATCCGCCGTAGTTTT
CAGTCCATGATCCAGTGAAATTCAGGGATAATTTTGTCCGGACGGCACCGACACAAAAT
20 TCCTGTTTCAGGATCTTCCAGTAAATTGATGATTGAGCGTGTCCGGCGCTTTCAACAAG
CCATTGCCCCAGCGCAGGATAACGCTTTGATACATGAGTACAATTTTCCGGCCTTC
TTCCGAGTGATAACCGTTTTTCTGTGCTTGGCGATTCCATCAGAAACGCTTCTCTTC
TTCTTTCCGGCGTTGTACGGCGGTTAAATTCAGGTGCTACGATAAAGCGGTTACTGAA
TTCTTCCGG

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 201>:

gmm_201

30 CTGCCACGAATTTTCCTGTCGTTAATGACCTGCCCGCTGAAGGTGAGATCGATTTTACCT
GGAGTGAACGCTATCAACTCAGCAAAGACTCCATGACATGGGAATAAACCGGGAGCAG
CACCAGACAACGCTCACTATCAAGGCAATACCAACGTCAACGGCGAAGACATGACTGAGA
TTGAGGAGAATATGCTACTCCCAATTTCTGGCCAGGAAGTCCCATTCGTTGGCTTGCTC
AACACGGCAGCGAAAAACCGGTAACGCACGTTTCACGCGACGGAAGTCCAGGCATTACACA
TTGCTCGGGCTGAAGAACTACCGGCTGTTACTGCCCTGGCTGTTTCCACAAAACCGCC
TGCTCGACCCGCTGGAAATTCGCGAACTCCACAACTGGTTCGTGACACTGACAAAGTTT
35 TCCCTAATCCTGGTAATTCAAACCTGGGACTGATAACTGCTTTTTTTCGAAGCATACCTGA
ACGCTGACTACACCGATCGAGGACTGCTGACAAAAGAGTGGATGAAGGGTAATCGTGTTT
CACACATCACTCGCACGGCTTCCGGTGCTAATGCTGGCGCGGAAACCTCACCGATCGCG
GCGAAGGTTTCGTACACGATCTGACGTCAGTGGCGCGGACGTAGCCACTGGCGTACTGG
CCGTTCAATGGATCTGGACATCTATAACCTTCATCCGGCACACGCTAAACGCATTGAGG
40 AAATTATCGCTGAAAATAAACCGCCCTTTTCTGTTTTCCGCGACAAATTCATCACCATGC
CTGGCGGGCTGGATTATTCGCGGCCATCGTGTTGCGTCCGTAAAAGAAGCACCATTG
GGATCGAGGTCATCCCCGCGCACGTCACTGAATATCTGAACAAAGTACTGACTGAAACCG
ATCATGCCAACCTGATCCGGAATCGTGGATATTGCCTGCGGTGCTCCTCTGCCCCGA
TGCCGCGAGCGAGTAACAGAAGAAGGAAAACAGGATGATGAAGAAAACCGCAACCATCTG
45 GAACAACGGCAGTTGAACAGGAGAGGCTGAAACAATGGAACCGGACGCAACTGAACATC
ATCAGGACACGCAGCCGCTGGATGCTCAGTCACAGGTAAATTCGTTGATGCGAAATATC
AGGAACTCGGGGCGAACTCCATGAAGCCCGGAAAAACATTCATCAGGAAATCCTGTGCG
ATGACG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 202>:

gnm_202

```
5 CCGTGTTTGCATCAAATGACTGGCCTGTTCAAGGACCCATTGACCCAGCAATGTGTGGTT
ATTATGAAACCAGAGGCAGAACGAGCTTCTCTCTTTTACCTAGGGGGCTGGGAGTATTT
CAAGTGCTTCCGATTTTATAACCCGAGTCCTAGAATTAACCCCGCACCCCACTGCCA
TTTACTCTCTCAATGTAGAGTTGCTTTGAGTAGGTAACAGCTTAAATTCTTAGAAAGCTG
AGCCCCCTAGAGGAAATTTCTAAGGTCAAGCACTCATTGCAACTTTTTATTGCTAAAA
ATGTAGAGAAGGGAGAAGTCAAGAATAACACTGCTAAAAGGGAATTTATTTTATTTTAT
10 TTGTTTATTTATGAAATGGAGTCTCGTTCTGTCGTCCAGGCTAAAGTGCAGTGGCGTGAT
CTCAGCTCACTGCAACCTCCTTCTCCAGATTCAATTGATTCTCCTGCCTCAGCCTCTTG
AGTAGCTGGGATTACAGGCACATGCCACCATGCCTGGCTAATTTTTATATTTTATAGCAGA
GACGAGGTTTACCATGTTGGCCAGGCTGGTCTTGAACCTCTGACCTCAGGTGATCTGCC
TTGCCTCAGCCTCCCAAAGTCTGGTATTACAGGTGTGAGACACCGCACCCAGCCTAAAA
15 AGGAATTTAATATGGACAAAGAGTACGATCCACAAAGGAGAGACAATTTATGAGCCCCCT
TTGAGCACAGCATAATACTGTCTCAAAATATAGAATGTGCCGGCTGCCGTGGCCCATGCC
AGTAATCCCAGCACTTTGGGAGGCCAAGGCGGGAGGATCACTTGAGCCCAAGTGCAAG
ACCAGCCTGGGCAACATAGTGAAACCTCATCTCTACAAAAAATTTAAAAATTAGCCAGG
TGTAAGTGGTGTGTGCCTGAGGTCTCAGCTACTTGGGAGGCTGAGGTGGGAGGATCACTTG
20 AGCCAGGAGGTGAGGCTGCAATAAGCCATGATCACACCACTGCACCCAAGCCTGGGTA
AAAGAGTGAGACTGTGTCTTGGCCGGGCGAGTGGCTCACGCCTCTACTCCAGCACTTT
GGGAGGCTGAGGCGGGTGGATCATGTGAGGTGAGGTGTTCAAGACCAGCCTGGCCAACAT
GGCGAAACCCGCTCTCTACTAAAAATACWATAATTAGCTGGATGTGCACATGCCTGTAAT
CCCAGCTACTCAGGAGGCTGAGGCAGGAGTATCACTTGAACCGGGAGGCTGAAGTTGCA
25 GTGAGCTGAGATTGTGCCACTGCACTCCAGCCTGGGTGACAGAGCGAGACTCCATCTCAA
AAAAATAAAATAA
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 203>:

gnm_203

```
30 CCCAGTCCTGAGTATTTAAATGTTTCATTTCTGTGCTGAGAGACAGAATTAGCACTTGA
TAAGGTTGCATAAAATGCCCTGGCACACAGGAGATGCTCAGAAAGCATTTATCCTTTCACC
CAGCTTCATAACCTCTTCATAAAAAAGTTGCAGACACCTCTCCTCACATGCACAGAGAA
ATATGGGACTATTCAAAGAGATGGACCAGCCACCTCCCTTCCCTCCCTGGGTGTTTTGCT
GCTCAGAGAATTCTGATGCTTAGATCACATCTTGGGAAAGGGCTCCAAGGCCAGAGCTC
35 ATGCGCTTGCTGTGGATGGTGGAGGTATTCCTCATGTTAAAGTTGGAGGAGCTGATCCT
CTCCAGAAACGCCTGGGCCAGCTCAGGTGTGATGTCATAGACCATGTCCAGCTGCTTGGT
GGCGTTGTCATAGCTGATAACAGCCCAATCTAGTTGGTGGACAAGGACGAGAATATCAG
TGAGGAGGGTGGAAGTGGCCAGTGTGGCCCCACCCTGGTGGTCTGCACTGTGCCCCATC
ATGGACACTTGGATACACCTCCTGGTTCTCATTGTGTCATTGATGTCTTTTTTCTTTCTT
40 TTTTTTTTTTTTTTTGAGATGGAGTCTCACTCTGTGCCCCAGGCTGGAGTGCAGTGACAT
GATCTCAGTTCACTGCAACCTCCACCTCCTGAGTTCAAGCAATCTCCTGCCTCAGCCTC
CGGAGTAGCTGGGACTACAGGTGCCACCAACGCTTGGCTAATATTTGTATTTTATAGT
AGATATGGGGATTCAACATGTTGTCCAGGGTGGTCTCGAAGTCCAGCATCAAGTGATCC
ACCCGCCCTGGCCTCCCAAAGTGTGGGATTACAGGCGTAACGACCATGCCTGGCCTCAT
45 TGTCATTGATTTCTTAGTGGTCTGTAAGTCTGTAAGTCTGTAAGTCTGTAAGTCTGTAAGT
TCTTTAGGAAAGAAATTTATTTTAAATATCTGAGAAACTGGGCTTTTAAAAGCTAATCTT
TGCACATTTATTTCTAGATTTGTTATATGGAGGTGAGAGAATGTGGTCCACAACTTTCT
GCGTTGAAGAA
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 204>:

gnm_204

5 CCCTGGAATAGCATAGTTAGGAGTGTGGGCCAACTGGATTTGAATCCTAGTTCCATCA
CTTAGTTGTGTGGCTTGAGACAATTTGATAAATTTCTGTGCCTCAGTTTCCCTTTATA
TGAAATATGGTTAACTGTGAGATTAAATTTGTTACACATGAAAATTGCGTAAGAC
10 TGTGCCAACACACAGTAAATGCCCATGAATAGCCTTTTCTCATTTTTATTTTTTTTTT
GGAGACAGAGTCTCACTCTGTTACCCAGGCTGGAGTGCAGTGGTGAATCTCAGCTCACT
GCAACCTCCGCCTCCAGGTTCAAGCGATTCTCCTGCCTCAGCCTTCCAAGTAGCTGGAA
TTACAGGCGTGCACCACCATCCAGCTCATTTTTCTATTTTATAGTAGACTGAGTTTT
GCCATGTTGGCCGGCTGGGCTGGAACCTTGGCCTTAAGCGATCCTCCTACCTTGGCCT
CCCAAAGTGTGGGATTACAGGATAAGCCACCATGCCAGCCTATGAAAAGCCTTTTGTA
ATCTTACGTTTGTCTCTTTGTTTGTGTTGTTTGTGTTTGGATGGAGTCTCACTCTGT
15 TCCAGGCTGGAGTGCAGTGGCTCAATCTTGGCTTATCACAACCTCAGCCTCCCGCGTT
CAAGTGATCCTCCTGCCTCAGCCTCCTGAGTAGCTGGGACTACAGGTATGCACCACCATG
CCTAGCTAATCTTTTGTACTTTTAGTAGGGACAGGTTTCACTATGTTGGCCAGGCTGG
TCCCGAATCCTGACTTCATGATCCGCCCACCTTGGCCTCTCAAAGTCTTGAATTATAG
GCATGAGCCACCCGCGCCCGGCTGTAATCTTATAAGAGATGGATGGATGGATGGATGGA
20 TGGATGGATGGATAAATAAACAATAAAATACTTAGACTGAAAGAATATATCCAAA
AGTACCCATTGGTGTTATCTTAGGAAAGGAGTGGTATGGGAGTCTTCACTTTAACAT
AAGTGGGTATCCCTGATATGAGGCCCAAGACCCCTATTTCTTATCGATCATAGTACTCA
TCATATTAGAATTGTTTATTAATATTGGCGTTTCCACACTACCTAGTTCCCTGCCCATG
TCCCTGGTATCTGTCGG

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 205>:

gnm_205

30 CCAAACTAAATGTTTGTAGCTGCTGTCATCTGGGGTCTTTTTGTTATAGCAGCTCAGCC
TATATCCTAATATACCATGTCTCCATCAAAGGTGGGAAAATGAAAGAAAGACAAAATAGC
TTATATCATGTTTCAAGAAAACTGGACAGAACCCTTTTCTTGCAGAAGCAAAGACTAT
CTCTACATCCAGCCCACTTCTCAACTTACCTGGCCCTGAGTTTGAATCCCTGAGCAC
TGAGATGGGAACATATAGATGGGTCTCAGGTACACCTGCAGGCTGGGGATGGTGAAGG
CAACATTCGGGAATTGATAGGCCAGGACTCTGTGGGACAGGTCAATCCGTCCACACGT
GGGAGCTTCAGTTGAAGACAGACAGGAAAAGATCACAATGACAGATTCTCTACAAGCAC
TACTGTACTAGCTAAGTCCCCAGGGGACAGGTAGGGATGGACCAGGGGTGTTAGGACTTT
35 GTACTTGGAAAGTGGGAGGTTTCTTTTTCTTTCTTTCTTTCTTTCTTTCTTTCTTTT
GAAACAGGGTCTTGCTCTGTTGCGCGATCACGGCTCACTGCAGCCTCAATCTCCCCAGCC
CAAGTGATCTTCCAACCTCAGCCACCAAGCAGCTGGGATCACAGGTGCATGCCACAACA
CCCAGCTAATTTTTGTAGAGATGGGGTCTCACTATGTTGCCAGGCTGGTCTCAAATC
CTGGGCTCAAGCAATCCTCCACCTCTGGCTCCCAAAGTGCTGGGATTACAGGAGTGAAC
40 TGCTGCACCCAGCCTGAAGTAAAAAATTTCTTAACAGGCACAGTGATAGGATAGTTTCC
AATTCTAGGAATCTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 206>:

GNMCJ23R gnm_206

45 AACTCTACAAAAAATACAAAAATTAGCCAAATATGGTGGCACATGCCTGTAGTCCTAGC
TACTTGGGAACTGAGGCAGGAGGATCACTTGAACCTGGGAGTTCAAGGTGGCAGTGAGT
TATGATGGAGTCACTGCATTTCAAGCCTGGGTGACAGAGTGAGACTCTATCTCTAAACCA

-665-

ATTTTAAAAAGTATCTATATGTAATATAAAAACCACAAGTGGGCCGGGCACAGTGGCTC
ACGCCAGTAATCTTAGCACTTTAGGAGGCCGAGATGGGTGGATTACTTGAGGTAGGAGT
TCGAAACCAGCCTGGCCAACCTAAAAAATTTTAAAAAATACAAAAAAAACCCCAA
5 AAAACCCACTAAAAATACAAAAAAAATAAATAGCCGTGCATGGTGGGGGGTGCCTG
TAATCCTAGCTACTCGGGAGGCTGACGCAGGAGAACTGCTTGAACCTGGAAGGCGGAGGT
TGCAGTGAGCTGAGATTACACCACTGTACTACAGCCTAGGTGACAGAGTGAGACTGTCTC
AAAAAAAACAAAAAAAACACAAGTGAGCTCATACTATACATGCTGTCTCTGTTTA
TATATATAGCTAAGATATATATGTATAAACTATATATATAGTT

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 207>:

GNMCJ23F gnm_207

CCAGCCAACAGAGAAAAGCTGGGACAAGAGACAAATGACATCATTTGCACCCCTAGATCG
AGCCATGCCTGAAGTCCCTCTCTGAACTTTCCAGTTACCTGAACAAAAATTCCTTTTA
15 TTGCATAAGCCAGTTTCAGTTTCAGTTCTGTTGCTTTCAACCAATATCAACCTGATATA
ATTGGCTTCATGTTTGTCTATTCCCTCTCCACCATGAGATTATAAGGTCTTATAAATTA
ATAGGAATTTCTAAATCTTCAGATAGAAAATTTAGCTATCTGAGAACTAGCACACAGCAA
GTACTCAATGAACTTTTTTTTTTTTTTGAATGAACGAAGACAATAAGAGCAAAAAAGGT
AGAGGGAAATAAAGAAGGAGAGAAGGAGAGAAACAATGTCCAGATCATGTTTGAAGAGCA
GGGCCACCCCTGCAGGCCCAAAGCTCACACATGCCAGGAGAAACGCCTACTGCTCCCTC
20 AACTCTGATTCCCCTGGAGCCTGGCACAGCCGAAAGCCAGGCCAGATGGGACCTGCCTC
ACTGACACTCATTCCAGCCTTGGGTTGCTTTGGCTTGGTTTTAGATAACAGGAAAAGCGA
GAAGGTCTGTCTCAAATGTCTGTGTGATACTCAGAATTGAAATCCTGGATCTCAAGGGCT
TAACCTCTCTAAGGCATCTCCACTCTGCCTCTGGTTCCGAAGAAACCCAGTGGGAGAG
AA

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 208>:

gnm_208

CATGACAACTCACCAGCCTGTATTCCACCCGAATGTAAGCTTCTGTGGGCAGGAGGCTCA
TCTGTCTTGTTGCTGCCATGTTGCTACTGCCAAGCAGTCCCAGTAGGCTGGTCATGGC
30 TGGTGTCACGAACATATTTGTGCAGCATATGGGTGAACATACACACGTCCTTTCTGAAA
CAAAATTGAACCTCAGTAGGACACTCACTCAGGCAAGATTGGGAAGCTTTAGATCCATTC
TGGAGGAGGGGAGATAGAATCAGAATATATTCATTTAACAACATTTATGGGGAACCTA
CTTTTTTGGCAGACCTCATGCTACAGAAACAACAGTACACAAAGCCCTGCTTTTCATGAAG
CTTACAGTCTACCGGGGACTGGGAGAGGCGGACCATAAACACACACATGCACACATATAC
35 ATGTTACATCCACACACCCCTGTATCAGATAGTGATAAATATTATGGAGCAAAGAAATC
TGGAGGAAAGGATCGAGAGCTCCAGATGGTGATGGTAGGGATAGGGGTGGTGCAGAACAA
GCTTTAATAAAACATTAGGTGGTCAGTAAAGGCTCTGCCCTCAAGAGGGATACAATCGCT
TCTTAAAGGTCCCACCTCTCAATGCTCCCACCTTTGGGATTGAGTTTCAACATGAGTTTT
GGGGGGTCATTTGAATCAAAGCACATGGTGTCTACCATCAGCTCTAAGTTTACAGCCTA
40 ACACTTCCGCAATAACAAGAAAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAG
GATCTTTCTAGTTACTTCAGCAAAAGTCCCAGGTTAGGTCTGATTGGGCTTGCTTGAG
GCAGGTGCCATTTCTGATCTGACCACTGTGGCCCGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 209>:

45 **GNMCJ24F gnm_209**

CCGCTTCTCTTCTTACTATTTCAAGATGGCTGCCCAATTCATGTGCAGAGGAAAGAGAAG

-666-

TTCTTTCTCTTTACTCTGACAGTTGAATAAAAAATCCAAAGCCTGGCTCTCTTTGGTCCA
 TCCCTGAATCAGTCATTATGGCCTGGGAATGGAGTATGCTAATTGACTTAAGGGAATCA
 GGGCCAGCACTGGAGTGAAGGTGGGGCTAATGCCACCTAATCCACTGGAGAGTACCAA
 5 AGTGTGCTTCCCCAAAGGAAATTCACAATACTGTGGGAAAGGATGAATTGATGCTGAGTC
 ACTATGAATGACAAATGCAAAGATAAACATACCAGGCCCACTCCTTGAGGAAGCAAA
 AGATCCTAGAGGGAGAGGCTGACATGGAACAGGATGTCTGACCAATAAACTTCTTCCAA
 TGAGGATTACAGACATAGTCATACCTTCCAGGTTAAGTAAGGCTCAATTCCAGGCAGCT
 GTCTGTCTCAGCTCCTCATGCACATCCGTCGCTTCTGTCTACCCAGCATTTGTTTCTCCC
 10 TTATTAGTTCTCATTGCTGTGTAACAAATTGACAGAAGTGCATCAACTAAAGCAACACA
 AATGTATTATCTCAGAGCTCTATAGGTCAAAATCCAAGCAGGCTCAACCGGATTCTCTG
 CTCAGGGTCTCATGGGGCTGAAATCAGGTGTGAGCTGGAGCTGTAGTCTTATCTAAAGC
 TCAGGGGCTTCTTCCAGGATGATTGGGTTGTTTTTCAGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 210>:

15 gmm_210

ACTACAGGCATGCACTACCATGCCAGCTAATTCTTTTAGTTCTTGAGAAATGGGTTCT
 TGCTATGTTTCCAGGCTGATCTCAAACTCCTGGCCTCAAGCAATCCTCCCATCTCGGCC
 TCCCAAAGTGCTAGGAATACAGGCATGGGCCACCATCCTGGCCACACAATTGTTTTTTA
 20 ATTTAGTTATAGTAGTCTGTACCACTGTAGGATGACAATAGTTAACAATAATATATAGTT
 TCAATAGCTAGAAGGAAGATACTGAACAGAAAGAAATGAGAAATGTTTGAGATGGTAGA
 CATGCTAATTACCCTGACTGATCACCATACATTATACACATCAAAACATCTTTATGTACC
 CCATAAATATGTACAATTATTATATGTCAATTTTTTTTTTTTTTTTGGAGATGGAGTCTC
 ACTCTGTCAACCCAGGCTGGAGTGTAGTGGCGCAATCTCGGCTCACTGCAACCTCCGCCTC
 CCAGGTGCAAGCGATTCTCCTGCCTCAGCCTCCTGAGTAGCTGGGATAACAGGCATGCCG
 25 CACCACACCCAGCTAATTTTTGTATTTTTTAGTAGAGATGGGGTTTCGCCATGTTGGTCAG
 GCTGGTCTGGAACCTCTGACCTCTGGTGATCAGCCCACTTCAGCCTCCCMAAGTGCTGGG
 GATGCCGGCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 211>:

30 gmm_211

ATACCTCTCCAACCCCATGTCTACTGTTATATCCTCTTCGTGCAATTTACTGAAGAACA
 TGCAAATTATGCTCCTAATATCAAAGCCTTTGCACTGTCATTTCTTTTCTTTCTGGAAC
 TTTCTTTCTCCAGATATTCCCGTGGTTCATTCCTTCACtCCTgaGGTCTCTGCTTAAAT
 35 GTCACCTCCTCAGGTCTTCCCTGACCAACTGTCTATAATAGTACCTGCTCCTTCTTTGG
 CTCCTTTTTCTACCCTGTTGATTTTTCTCCATGGCACTCATCACTCCCTGACATAATA
 TAGTTATTTGATTATCTATTTCTGCCTGGTTCATTCCAACACACCAGCAGGGAGTTAGT
 TTTGTAACTGCTGTATTCTCAGAGCATAGAATAATGCCTGGCTCACAGCACTACTCAAC
 AAATATTTGAAGAATGAAAGCATGAAATAATTACACAAACATAAATATGTATTATAGCTG
 TGCTTGGTGCTATAAAAGAGAAGTATTGGCCTTTTCTTCTGGCTAATTGCTTTGGCCTGG
 40 TCAGAGAATTCAAGGAAGGCTTCATTGAAGACTTGAAATTTACAATGAATTGATCTTAGC
 CGGGCAAAGAGGAAGGGGAAGAATCCTCTGGGCCGAGGAACAGCCTGTGAGAGGGTCTTA
 ATCTGGGGAGGATAGCACTTGGAGGGACAGACAGATGGCCCGGGCAGGAACCTTGGGGA
 ATGAGGGGCAAAGAGGAGGGTGATACAGCCACTGGAAAAGCTTTGGGCTTTATCTTGAGG
 GTAATGGGGAGAGGCGGAGGGTGACATGAGTTTATTGAGATGGTGTTTTTCAAACAGCA
 45 TCTGTTTGAAACAGCAATCTGGTTTCTTGTATTaATAAAGTTGTATACAGAGCTGA
 CTTTGTGTACGCCCTGTTTGAAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 212>:

gnm_212

CTAAAATAAAGCCTGTTTTATAATAAAGTGTGAATATCTCACATAATTCATTGAACATT
GTACTGAAGGGGCAAACCAGAATGGTTGTATGGGTACTTGAAGTACAGTTTCTACTGAAT
GCACATTGTTTTGCACCATGTAAAGCTGAAAATTGTAGATTTAACCAATGTAAGTTG
5 GAGACCATCTGTGTTTTTCTCCTTAAGGCATACAAAAGTGTAGCCAAAGAGTGTTC
AAAGCTGGATTACATAATGAATTATTATTTTTTTTTTGGAGATGAAGTCTCGCTTGT
GCCCAGGCTGGAATACAGTGGCGTGAGCTCGCCTGACTGCAACCTCCGTCTCCTGGGTT
AAGCGATTCTCCTGCCTCAGCCTCCGAGTAGCTGGGATTACAGGCATGCCTGGAATTAC
AGGCACACGTCAACACACCCAGCTAATTTTTGTATTTCTAGTAGAGACAGGGTTTCGTCA
10 TGTGGTCTCAGGCTGGTCTCAAACTCCTGACCTCAAATGATCTACCCGCTTGGCCTCCCA
AAGTGCTGGGTTTACAGGTGTGAGCCACTGCACCTGGCTGAAAATCCAGATTTTTGTCCA
AGATTGCAGATAAATTGCCTGGGACAAGTCAATGAGTGAGGAGAGATAAGTCAATGGAC
TGAGAAGGGGTAAACTCAGTCTTGATAAACAAGATACAGAGGGGATTGGGTGGATGGG
GAGCAGTGAGTGAATGGGCAAAGATAGGACAAAACCAAGCCCACTTAAAGAACAATAATA
15 TTACAAAGGACAAAGTTGAGAATAAGAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 213>:

gnm_213

TAATGTTTTCTCTTTTCAAAGATGTAATATTTCTGTTAACACTATAGAAAGATAAGAA
20 AGATAAGAACCTTCAGGGCTCTTTGAAGACAAAATTGTATTCTGAATTGGGCATTCATTA
GACTGAGCGGATAAATCTCTAAATCTGGGTTTTATGATTTTAGGTTTGTGTTAATGG
ATTTCTTTGCTTAAACTTCAGGTGCATGCATGATAATTTGAAGAGCAGAGAGATGGACA
AATGTGATTTGATTATAAGTCTTTCAAAGGCATTGAAAATGTATTTCAGGTTTAGTT
AAGCTTATTTTACACTCTTAGTTGAAGGCAGGAGTGATTGTTTTCTCCCTCCACACC
25 TCGAAAGATGGAATGGTTTTTCACTTATAAATTTTCCATCTCAGAAAAGGAGGAGCAGA
GGTTTTCCAGAAGGTTAAGAATAAAGGTGGGGAAGGCAAGCCCTTGTTACCATAAGAGC
AGGAATCCATACGGAAGAGTGGCTGGTTTAGATTGCTGGCTTGAGAGTGGATTATTTTA
TCCAACCTCTGATCAGTGTTGTGAGAATTAAGTAAGATAATGGATTTAAGGGGCTTAGAA
GTGTCCAATCAATGTTAGCTACTGTTGTTATTCTCAGTACTACCTGTAGGCTTGATGGAT
30 ATATTTGGAGACATTTGTACCAAGGTTATGGGGCAATAAGTGCCTGGTTCCCATTTGGC
CCAGTGAACTTTTCAGGACTTAGGATGAGGAAGGCGGGAAAGCCCTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 214>:

GNMCJ29F gnm_214

CCGGCGCGATCACAGCTCGTTGCAGCCTCGGGCTCCTACAGCTTATGCAATCCTCTCACC
TCAGCCTCCCAAACCCACACCACCAAGCCAGCTAATTTTTTGTATTTTGGTAAATACG
AGGTCTCACTTTGTTGCCAGACTGGTCTTGAACCCCGGCCCAAGTGATCCTCCACCT
TGGCCTCCCAAAGTGTGTCTCCCACTACACTCCCATCTTTCCCTTAAAAAAGTCTG
AGTCTGGGTGCAGTGGCTCACACCTGTAATGCCAGAGCTTTGGGAGGCTGAGGCAGGAGG
40 ATACCTTGAAGCCAGGAGTTTGAAGCAGCCAGGCAACAGCCAGACTCCGTCTCTAC
AAATAACACTTTTAAAAAATTTACCCAGGATACCCAAAGGACTATAAATCATGCTGTTTT
AAAGACACATGCACACATATGTTTATTGCGGCATTATTCACAATAGCAAAGACTTGAAC
CAACCCAAATGTCCAACATGATAGACTGGATTAAGAAAATGTGGCACATATATGCCATG
GAATACTATGCAGCCATAAAAAATGATGAGTTCACATCCTTTGTAGGACATGGATGAAA
45 TTGGAATCATCATTCTCAGTAACTATCGAAGAACAAAAACCAAACTGCATATTC
TCACTCATAGGTGGGAATTGAACAATGAGAACACATGGACACAGGAAGGGGACATCACA
CTCTGGGGCTGTTGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 215>:

gm_215

5 GTACCCCTTCTTTAAATCTTCAAATATCTAATCAGGGGTTCAAATTCCTCAATTGTCTC
ACAATTTTTGGGTTTTTTTGAGACAGGATCTTGTCTGTCACTCAGGCTGGAGTGCTGT
GGCATGATCATAGCTCACTGCAGCCTTGAATCTGGAGCTCAAGAGATCCTCCCATCTCA
10 GCCTCCTGAGTGGCTAGGACTACAGGTGTGCATCACCACGCCAGGCTAAATTTTAAATGT
TTTTATAGAGATGGAGTCATGCTGTGTGCCCCAGGCTGGTCTCAAACCTCCTGGCCTCAA
CAATCCTCCGCCCTGGCCTCCCAAAACACTGGGATTAGGTGTGAGCCACTGTGCCTGGCC
TAATTTTTTATTTATTTTATGGTATTTTTTGTGTTGTTGCTTTGTTCTTTCTTTTTT
TTTTTTTTTTGGAGACAGAGTTTCACTCTTGTCACTCAGGTTGGAGTGCAATGGGATGAT
CTCGGGGACTGCAACCTCTGCCTCCCGGGTTCAAGAGATTCTCCTGCCTCAGCCTCCCG
AGTAGCTGGGATTATTAGCATGCGCCACCATGCCAGCTAAGTTTTGTATCTTWAGTAG
AGATGGGTTTACCATTGTTGGCCAGGCTGGTCTCAAACCTCCTGACCTCAAGTGATCTGC
15 CCGCCTCGGCCCTCCCAAAGTGCTGGGATTACAGGTGTGAGCCACCGTGCCAGACATGAC
GTGTTGAATCAGGATCCAAATAAAGTCTAGATTCTACAAGTGATCAATCTTTGTTTTT
GAGTTAATAGGGTCTCTTCTCTCTCTCTGTAATATATTGGCTAAAGAGACTAGGTTG
TTTGTGTTGGGAGTTTCACAGTCTTGAATTCTCTGGCTGCACCTAGTCT

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 216>:

gm_216

CCAGTCTGGAGTGCAATGGCGTGATCTCGGCCCACTAAAACCCCCACCTCCTGAATCTAA
GCAATTCCTGTCTCAGCCTCCTGAGTAGCTGGGACTACAGGCTCACACCACCATGCCC
25 GGCTAATTTTTGTATTTTTAGTAGGGACGAGGTTTTGCCATATTGGTCAGGCTGGTCTCA
AAGTCCTGGCCTCCGGTGATCCACCAGCCTCAGCCTCCCAAATGCTGGGATTAGAGGCA
TGAGTCACCATGCCCAGCCTAAACTTGGCAAGATAATAAATCACCTTTTTAAGTGTCGTT
GGGCACTGTCTGGTTGTTTTCTTTAGGTTACCATGCCAGCAATGATTCTTTTGAGTT
TCTGACAGAAAGATAGTGGTTTTTCATCCAAATAAGTCAACTACTCTACCCCATCCCTAAGC
CACTTGTATGGAAGAAAAAGAGGAAGAAGCCAGTACTGTGACTGCGTAAGCGTCCCCCA
30 GCATACCCGGCTATGAGATGTGTGGCAGCTGAGACCCGGGAAGTCTCAAGGGCACCAGG
CCCCATCTGTCTGCACTCACTCACCTTCCTCAGTACTCGCATGGGCATGTCACTGACTT
TACATGCTGTGTCAGCTCCTTGGTGAGCTGGCCCTGGTCATGGGACAGGAAGTGTGGGGT
CAGGACAATAGAGAGCTTACCATTGTCAGAAATGAGCACAGGGGCTCATGATGAGTGCCA
ACCTATTAGATAATTTAAAAAAAAGTGTGAATGAGTGGAAAAACAAGGTGATGTTTG
35 AGTCTATAGTGGTCAAGGGCTTCAGAAAAGGACAGACCCAAGTTCAAATCCCTGTACTTT
GAATTTCTACTTCATGCCATGCAAAATTACTTTACCCCTTTTAACCTCAGTTTTCTTCTG
TGTGAAACAGGAACAATAGTTTCATTTCGTCATTTCAGTTTCTCTCAAGATTTACAGAGATC
ATACCTATAAAACATCCAAGTCATTTAAATGTATCATCATTTCTGTGATTAATTAGTGGGA
TCCATTTCACTATTATTGGATATACAGTTCTGTGCCTGAAACCTACAAAAAACAAAATG
40 TTAAGTCTAAAAAGCATTAGTGATTTCTCATTTTTATATTACTAATTATAACCTATTTA
ATCACACAAGGCCTTGTCGCGCGCAGGTGCTCAATAAACACTTGTCGAATCAATGCATGT
GGGCTCCGGAGCCACACTGTTAGATTCTATTCTGCCTCCACCCTTATCAGCTGTGTGA
TCTGGGTAAGATAATTCACCTCTTTATGTCTGCACTTCCCTCTCCATAAACTATATATAA
TGAGAATCCTTAGCTCATTGCGTTGTGGTGAGGGGTGAATGATTTGGCACACAGGAGGGG
45 CTTGTTAAACATTAGCTGTGATGATCTCCTTCCAAATCTTCATTTTCAGAGCCACAGATG
AGGCCATAGTGCAACCAGGTGACCTTAGAGTGAAGTACACATGATCGCCAGCTATGCTC
TATCTCCACCATAGGTCCAAGACTGGGTAGTTCTGGCCTGGAGGTTTCTGCTGCATCTGC
CTTCTCAGTGTTACCTAAGGACTTTTGTATTTCTCCTCGCATCCCCACAGATGGGGT
TCAGGCTGCCGGACACAGCTGGGTGATGCCAGGGCAGTGGTCACCTGTGCCAGCCCCGTG
50 AGGTAGCTGGAGGATCATTGTTCTTCTCTCGGGCTCTGGGCAGATGCCAGGGCTGGG

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GTGACCCATGCCCTCAAGTTTCTTGCTTTGGTGGGCCACATTTCCCTTGCCAAAGAGGG
TAAAGGTCACAGGATGCCGGAGAGCTGTGACTTCTGTGCCCTGGGCCCAAACATATGAA
GACCTGACACACTATGCTAAAAGTCCAACGCTGGGTGCTCCCAGAGCTTCTTGCCCTCAC
CGCTTCTGCTGAGGGAGGAATGAATACTATGTCCTCCCAGAGCTTTGGGAGCTTGTAGCA
5 AGCAGCCTCCCAGCGCAAAATCTCTTGAAACCTCTAACTGTGTCTGAAAGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 217>:

GNMCJ31F gnm_217

CCACAAATATACTTTAGCAAATATTTAGCATAACTATCAAAATTACAAATCATATTAAA
10 TTTGTATAAATGTATGCAATTTTCGGAACACGCATATCAACAACATACCCATAAATATAA
CTGAGATGAGATCTAATGTACCTCACTTGACAGTGCCCTCCCATGCAGTATCGCCACAT
TTGACAATGCCCTGCCCATTTAATCTACCAATAAATCGAATCACTTAATACCTCTACAAG
ATGAGAGATACATTCTTTAGACTCCCCAAGGGATGCAGCTGAAAAAATCCCAAAGTTAG
TTTTAAGCCAAAAAGACTTGATTTAGGATTTTGACACTGGAGAAACCCATCAAAGATGTC
15 AAGTTTGAAAACACTTGATCAAAACAGAAATCACAGGTCACTATTAAAAGAGTATTAATTT
AACCAGAGACTTCCAAAGCAATACAGAACTTACATGGATATAAAACCCTAACCCTTT
AAAGGTCAGATTTGCTAAGTGATCAAAGGGGTACTTGAATTGAATCGACACAGGAAGAG
TGTGTACAGGGTTATGAGTGTAGGCAGGTGTTACTTTGGTCATATCTCCATTGGCCACC
TGATTACACATGAGAATGGCATCTTTACTCACCAGAAAGCCAGTATTATAGGAGGTGTAG
20 GAGGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 218>:

GNMCJ32R gnm_218

GTACCATTATGTTTCCTTAAAACAAATGACTCCCCTGTCTACTAGGCATTGTTCTAGAGTG
25 CTCATTGGGGGGTGGTTTGAAGACAGTGCAATGCTGCTAGCTGCAGGTACTTTATTGCTGG
TGCTTTCTAGCCCATCTGGTTTATTCTGGGATGCCTGGTGTTCAGAACCTGGCAGGTGC
ACATGTGAATAGGAGACACAGGGAGTTCTCAACTGGTCAGCAGCTTCTTAAAGCACAGGA
AGTAAACTCCAGCCCTGCCACCAATGTCTTTGCCTCTCATCTGCCTCATGGGGTGTAGA
GAATCATCTGGAGTGTGAGAGTGGGGCTCTGGAATTACCTTGACACTGGTTCAAATCCAG
30 GCACTGCCACTTAGCAATGGTCTAGTCCTAGGTAACACATAGCCTGTTAAGCCTCCAT
TTCCCCATCTGTAAATGGGATTGTGGAATGCCTTCTGATAGGGCCTCACAGTGTTGGG
CACACGCTGAGTGTGCATCAGTGCTAACGATCATTCTCTTCTGCAGGCTCTGTTCTGT
ATGAGCTTCTGTTAAAGACCACCAGAAGGCCTGAGGAGCTTTTGAGGTAGGAAAATGTAA
CTCGGCCTGGGTGCTGAACAGGCCTTTCAGAGCCTTCTGCCAGAGCAGCCTACTTTTCCA
35 GGTGGGAGAGTTAGGCAGTCACATCTGTAGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 219>:

GNMCJ32F gnm_219

CCGGGCAACTCTTCCTGCTCGAACATGTAGGTCTTCCTCAAAGCAGGTCTAGCTTCCATC
40 CATTTGCTCAGTTATTGGCTTGCCACCTGGGCAGGTCTTTTAAATATAGTTCAGTGGTTT
GTACCAGCAAACGATTAGAAATGCAAAGTATTAGGCCTCACCCCTTACCTACTATATGT
AAACTCTGGGAGTGGGGCCCCCAATTTGTGTTTTTACAGCCTTCCACACAATGCTGATG
CAAGCTCAACTTTGAGAATCACTAACAGAATTAACAGTCCAAGGAATGAGAGAGCTTCA
TTAAACTTTGCATATTCCTGTAATGATCTTGAAGGATTATACACCAAGCACTCTATGCT
45 TCCTGGTTTTCTGGGAGATAATTTACTCTTTGGAATTCCTTATTCTGGTCTGAAACACA
AGGCCAGAGTTGAGAAGGTGCTTTTTAATATCCATTACAGGAGTCTGTAAGCCAGCGGTT

-670-

CACACCAAAAGTTCAAATGCTGTAAGGCCTGTGTTTACTAGCTTAGACACTGAAAAATCA
 GTCAGTGGCTGGGTGAAGTGGCTCATGCCTGTCATCCCAGCACTTTGAGAGGCTGAGGCA
 GGAGGATCACTTGAGCCCAGGAATTTGAGACCAGCCTGGGCAACATATCAAGACCCCTATC
 TCTGCAAAAATAAATAAATTAGCCAGGCATGGTGGTGTGTCCTTTAGTTCCAGCTACT
 C

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 220>:

gmm_220

10 CCTGACCCCATCAGCAGAGCCTAGGTACACAAGCCTCTAAATCCAAGGCCCATCACCTGT
 TTCCCTGTGTGATTTGAAATGGGGTCAAGCTCCCATTTCTCCTTGAAGAACTGAGCACCT
 ACTTTGAATATCTCATCAGGAAGGCATTTTATTGCTGATGGCTGGAAATATGGCATCAAA
 TCCTTGTCAAGCATCCGGAGCTCTGCCTTAGTTAATCCAGCTGGGGAGAAAAAGGAATCA
 CGGGGGTTTAGTTCAAGCCATCAGAACTCCGCTTGTTTTATTAATGGTGTGCATAATGT
 15 TCAGATCTGAGTGTTCTAGGCAGGCATCATTCCCTTACAAAAGGCCCTGGAAATCACACTG
 GGGAAATCAAGTTCCTTCATCAACTCAGAAAAAAAATGTGGGTACATTAGCCCTGATT
 GGCCCTCTACAGTGAACGCATGCCAGAAAGGAATTCATTTACACACTTTCAAATTTT
 GTATAAACCTACTTAGGGGCAATTAATCACATTCTAACTAGCGGTTTTCCAACTTT
 AGTGTACACAAGAATCTCCAAAAGAGCTTGTTTTAAAAGCAGATTTGCAGACCCACCCTC
 TGCAACTTCAAATCATGAATGTAGGTTCTACTGTAACGCCACTGATGTTTGCTACACAT
 20 GGCCAAGGATAATGTTTTATTTGTGTCCCCACATTTAAGTTTGGAAAGAGAGAGAAAGG
 TATGCTCAGGGTGAGTCTTACCTGCAATGGTCCCAAGCTCCTGCAAGACAGAACTGGTCC
 ACTCAGTGGGATCCCCAACACAACCTTCAGCCTTCCTCTTAACTCGGCTAAGACATGTG
 TGCTGCAGAGCAGGGTCCCAATCTGGCCACTACCACCTGGTAGTGGTTAAAGAGGGAG
 GGATATAATATGAGCTTGGACTCTTCAGCCAAAACAACAAACACACACACACACAC
 25 ACACATACACACACACACTGCACAGTAGGCTCAGCAGGGACAGCAGATCCAGCTTATCCC
 ATTAGCCAGTGGGATTTTAGCCAGAAAGGTGCCAAGTGTGAGGAGGTGGAATATCTGG
 ATGGATGGATGGATAGATGGATGGATGGATGGATGGATGGATGAATTAACCCATTT
 GCCATTTTGCACATTATATTTTAGTTACCTGAATTCTGAGATCTTTATAAGTGGGATTT
 CAGTGATGTTTATAGCACACAGGGTTGCACCAAGTCTACCAAATGAAAGCTCTTCAGGT
 30 CCTGGATACTGTATCCTGAATCATCCAGGTACCCTTGCAAAATGGATTACGCCTAAAAAA
 TAGTAAGAATAAAAGATAAACCATCCAGGGATGATCCAGGGTCCCCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 221>:

gmm_221

35 CCGGAATCTGTCTCTATCATGTTTTGAACTTTGCTTTTCTTTGTGTTGGCTTCATTGA
 GAGACAGGCTCTATGCCTGCATGTGGTAGGTTCCAGCAGATCCTTGTGTATATCCTTCTA
 AGTTCAAGTCCAGAGTAAAGAAAGCTCTTCCCCTAATGCTCCACTCAAAGTTCTGGTTGA
 CTCTGGTTAAATCACATGTCCAATCCAGAACCAGTACTGCAGCTAGGCTAAGGTATGAA
 TTGAAATTCATCACTCCTGGAACCTGGTGCAGTTAGCTTTGACTGAACCACATGAAGCAG
 40 GAATACAAGAGAGGTGGTTCTCCAGAGGAAGTTATGAATGATGAATAGCCACTGTGCTAG
 AATTATGGAGACTTATGTGTGTCAGCCGCCTTAAATCAAGGCTTAGTTTAAAATAGTTTAAC
 ACCAAAGCATTTTGTGTGCTACTCTTGAATTGAAGAGTAAACATTGGAATTGAAGGGGT
 GAACATATTTCTGTAGGACCACAGAGGAAGAAAAATCATTAAAGGGGTAAACATATTTCT
 GTAGGACCATAGAGGAAGAAAAATCATTCTGGCTGAAACCTCATGAAGAAGGTGACATT
 45 TGAGTTGAACCAAGAAAAAAGAAATGTCTGCACTTGAAGTGCAGAAGGGCATT
 TCAGATGAAGGACTGGTTTGAACAAAGGCAAGAGACAGGAATTAAGGTTTGTG
 GAGGTTGTGGAAGGCTGGGTGCGGTGGCTCATGCCTATAATCCAGCACTTTGGGAGGC
 CGAGGTGGGTGGATCACTTGAGGTCAGGAGTTTGATACCAGCCTGGGCAACATGGTGAAC
 CCCGTCTCTACAAAAATACAAAAAGCCAGATGTGGTGATGTGCACCTGTAATTCTAGCT
 50 ACTTGGGTGGCTAAAGCACGAGAATTGCTTGAACCTGGGGAGGTGGAGGTTGCAGCGAGC

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TGTGCCACTGCACTCCAGCCTGGGTGACAGAGCAAGACTCCGTCTCCAAAAACGAAAA
AAAAAAAAAAGGGAGAAGAAACGTTGTGGAAAAAGATGCTGGAAAAGTTTGGATCCTGA
TGCAGAAGAAGTTGTATGTCCAACTGTCTGAGGGTCATAAGAGTGACTGAAGGAAATAA
GCAGCAGACACACAGGACACAAGTGCCTTTAATATTGGTG

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 222>:

GNMCJ35R gnm_222

CGAAGCCGATATATGCCACCATATAAGCGAAAAAGAGTCCGGGATTTTTTGCTCGCCAGA
CATAACCCGTTCCGGGCATTTTAAACCCGTTTATCAATCGCGCCTGCCGCCACCTTTC
10 CATGCTTCGCGGAAACAAAATATCGGGATAAGGAAAAAACGGCAACGACAAAAACTGC
TGTACATCCATAACTACTTTCCTTGTTTCTTTTGTAAATCAAGTAAGTGTTCGGGTGTGA
CGGCGGGATACCCCTGCGCATCTCCGGTACCTGGTGCATAGCCGGAATAGGGACCAGCG
GCCCTAAAAAACGCGGTTTACGTTTAAAAATATAAAGGTGAGCCAGCGCACCAGAACGGG
CGGCAAAATTCACGAATACGTACTGACAGCATATCTTTCGGTGACGGTACGGCATAACACT
15 GAGCCTGAATCCCATATGCAGCGCAATAAATAATGCTCGCTCACAGTGAAACGTTGGG
TGATAATAATGAATCATTAGTATCGAAAACTTTGCGTGTACGACGATGGAATCCAGCGT
ACGAAAGCCTGCGTAATCGAGAACAAATATCTGATGGGTGACACCAGCAGCGATTAAATC
TTTGCGCATGGTCATCGGCTCATTATACTTTGCAATGCGTTATCGCCGCTCAGTAATAG
ATAATTTACCTTACCGCTGTTATAGGCATTAATCGTCTCCTTGAATGC

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 223>:

GNMCJ35F gnm_223

CCGATGTATGTTTCACGCGTTGCATAATTAATGAGATTCAGATCACATATAAAGCCACAA
CGGGTTTCGTAACTGTTATCCCATTACATGATTATGAGGCAACGCCATGCATCCACGTTT
25 TCAAACCGCTTTTGCCCAACTTGGGATAACTTGCAATCTGCACTGGAACCTATTCTGGC
AGACAAGTACTTCCCGCTTTGTTGACCGGGAGCAAGTCTCATCGCTGAAGAGCGCAAC
GGGGCTGGACGAAGACGCGCTGGCATTTCGCACTACTTCCGCTGGCGGGCGCTGTGCGG
TACGCCATTGTGCAATTTTAATGTTGGCGCAATTGCCGCGGTGTGAGCGGAACCTGGTAT
TTCGGTGCCAATATGGAATTTATTGGTGCGACAATGCAGCAAACCGTTTCATGCCGAACAA
30 AGCGCGATCAGCCACGCTGGTTGAGTGGTGAAAAAGCGCTTGACGCCATCACCCTTAAC
TACACGCCTTGTGGTCACTGCCGTGAGTTTATGAATGAACTGAACAGCGGTCTGGATCTG
CGTATTATCTGCCGGGCGCGAGACACGCGTGGCTGACTATCTGCCAGATGCCTTTGG
GCCGAAAGATCTGGAGATTAAACGCTGCTGATGGACGAACAGGATCACGGCTATGCGCT
GACGGGTGATGCGCTTTCTCAGGCAGCGATTGCGGCGCAACCGTTTCGCATGCCTTA
35 CAGTAAGTCGCCAAGCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 224>:

GNMCJ38R gnm_224

CTGATAAAGACATAGCTGAGCCTGAGGAAGAAAAAGAGATGTTTTGTTTGTGTTTGA
40 GATGGTGTCTCGCTCTGTTGCCAGGCTGGAGTGCAGTGGTGCGATCTCGGCTCACTGCA
ACCTCCACCTCCGGGTTCAAGCAGTTCTCCTGCCTCAGCCTCCTGATTAGCTGGGATTA
CAGGCACGTTGCCACCATGCCCGGCTAATTAATAATATTTATAGTAGAGATGGGGTTTCAC
TGTGTTAGCCAGGATGGTCTCAATCTCCTGACCTCATGATCCATCCACCTCGGCTCCCA
AAGTGCTGGGATTACAGGCGTGAGCCACTGCACCTGGCCAAAAAAGAGGTTTAATTGGAC
45 TTACAGTTCCACATGGCTGGGGAGCCCTCAGAATCATGGCGGGAGGTGAAAGGCACTTCT
TACATGGTGGCGGCAAGAGAAAATGAGGAAGATGTAAAGTGAAACCCCTGATAAAACC

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ATCAGATCTCGTGAGACTTATTCACATCATGAGAACAGTATGGGGGGAACCTACCTAT
GATTCAAATTATCTCCACCAGTCCCCCCCCAACACATGTGGGACTTACAGGAGTACA
ATTCAAGATGAGATTTGGGGCCAGGCGTGGTGGCTCATGCCTGTAATTCCAGCACTTTTG
GAAGCTGAGGCCGGT

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 225>:

gmm_225

AAAAAATTAGCCAGGCGTGGTGGCAGGTGCCTGTAATCCCAGCTACTTGGGAGGTTGAGG
CAGGAGAATCACTTGAACCCAGGAGGCAGAGGTTGCAGTGAGCTGAGATCATGCCACTAC
10 ACTCCAGCCTGGGTGACAGAGTGAGACTCCATCTCAAAAAACAAACAAAAACAAC
AAAAAATTCACCTGGGAGGTACAAATTCATAGGTTTGTGACAGGGCTTTGGAATCCAC
ATATTATAAACTCTTCAAGTGATTCCAATGTCAGCCAGAACTAGTGACCAACAATAAT
TCACATCCCATTGGAGCTCCACATGGGCACTCCTGTGAGTGCAAAGCACCTTCCGGTCTCT
GGACACACTGAATCAACCATGAACAGAAATACGGACTAATGTACAGCTGGTATTTGAGT
15 TAATTATGCCAATCATGGAAAAAACAGACACAGCTTCTCACAAAGGGTGTAACCTCCA
ACTTCTCCTAAATAGCGCTGTTCTAAAGCTAGGCACGCCCATGTGGGCAGACTGAATTCA
ACCTTCTTTCCCATGACCAACACTCTCTGACCTCTAGGAAGCCACAAAATCGTTGCAGA
GAAGGAAAAGCCTTCTATATTCTTTCCCCACCAAAAAAAGAAGAAGAAGAAA
AGTCAAAGCCTAAAGTTTTTAAATTTCTAGATTAAATAAGTTGGTTTGGGCTAGTTACAAC
20 TCAACCCTTGGAAGAATAAAGGAATACTGTTAATTACCCCATATGAGATTTTAATAGA
GAAAGGCTTAAGGGAAGACCACCCTAGTGACCAAGGCAGGATGACATTTTCAGAGCA
CCTAGCTGGGCTGGCAGGCAGCAATCTGTTTTCTCTCAAGTGACTGAGAAGGGAACGT
GGGCCAGGCACAGTTGTTACACCTGTAATCCCAACGCTTTGCGGGGCAGGAGCGGGCA
GATCACTTGCGGTCAGGAGTTCAACACAGTCTGGCCAACATGGTGAAACCCCGCCTCTT
25 CTAAAAACACAAAAATTAGCCAGGCATGGTAATCTGTGGTCCCAGCTACTCGTAAGAAGT
AATGCTATAAAGTGTAAGTGGTAAATGCAGAAATTAACAGTTATGCTTTTCCATTA
GCCACGCCCTCACAGACAGCATCTGGCTTACAAAAACAAACACTGAAAGTTACAACAACA
AAAGTGAAACATACTTCACCAACCCAAATTCAAAGCCTTGGAATAGACCAATTATGCT
AAGTGCTAAATGACATGGCAGCAATTAATCATATAAGGAATCGTTTTCAAGTTTGCTAA
30 ACTATTTTAATTCTTTCAATCTAAAGCCTTAACAAAGATGAGCAGCACTAGCTGTTTCCA
CCCTTTGATTATGATAAACTTCATCTCCACTTTTATTAACTGCTAACCATATTAA
CAATCCTTCGGTGAATCTGTCCACCAAGTTGATTGTGCTGTTTCTTCAGCATCTTC
AATATCTGCCGGGATGC

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 226>:

GNMCJ39R gmm_226

GGGCTTGGCTGATCCATGGAGATATCTGCAGCTGCCAGCAGCTGAAGTCTTTATTTGCC
TTTATCTCCGTTGTGGCCTCTGATGAGCCAGACTACAGAGATGCTGATGAAATCTGGGAG
GCAATGGTGGAGGCTGTAGTTTCCAGGAGAACTCTGGCCCTGGGGAAATCCTTCCAGTC
40 TCTGAGTCCCTGTGGCACATCTCCATGTGTGGCGGACTAGGTGATTGCTCCTAGTGATT
TGCTTAGTTCTTTATTAGAATTATAAGCTTTTGCCATGTGACTTTGTAGTACATCTCA
ATAGGTAGAGTCTAATTCCTTGCCCTTCTAACTTTGGGCTTTGGTCATTGGAATGTGAGC
AGACACATTTTCCCCCAGCAGAAGTTTTAAATGTGCTGCATGATTGACTTGACCTCTTG
GCAATTGCGTCTCATGTGAAGGACATGTGGAGCAGACCTGAACTCAACCCAAACCTTGG
45 AGCCAAGCTGAGCTCAGCAGAACCTAGCTGAGCGCAGCCAAGCCAAACCCAGTGTAATCA
CAGCCAATCTGGAGACTCAGAAGCAAGAAACAAATATATGTGATAGGGATCTATTGGGAG
TTGAGAGCAATTTCTCTTTTTTAAAGTAATTGTGATCTTTTGAGATGGAGTCTCACTTG
TCACCCAGGCTGGAGTGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 227>:

GNMCJ40R gnm_227

5 CAATAACTTTTTTGTATAGCCATTTCATTGTCTAGATCAATGACAGAACAACATATTTTC
TTTTTCCCTCAAAGCCCGAGTGATCATTAAAGGAAGGCGATGTAGATGTTTCAGATTCTG
ATGATGAAGATGATAGTAAGTATAAAAAGGTTTAAAGCCTGGGCACAGTAGCTTACACCC
ATAATCCCAGCATTTTGGGAGGCCAAGATGGGAGGATCACTTGAGGCCAAGAGTTTGAGA
CCAGCCTGGGCAACATAGTGAGACCTTGTCTCTGCAAAAAACATTTTTTTCAAATATT
10 TTCTTAAAAAAGGCTTAAAGTAGAACTAGGCAGGGTAGTGTGTGTCTTTAGTCACAGCTA
CTGGGAGGCTTAAGTGGGTGGATTGCTTGAGCCAGGAGTTCAAGCTCTGCCTGGTGGC
AAGACTCTGTCTTCTTTAAAAAAGTAAGCACAGAATACCTGGCATCTATTCTA
ATAAGTAGACTGCAACAAATGACAACTTTTGATGTAATCTTTTGTATATTTACCATTG
ATATGCAGTCAGTTGTCTGAATGCATTATTTATATAAATAGTCCATTAATTTTCATTG
ATGCTGGTGGAGAAAAGTCTTGAAATT

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 228>:

GNMCJ40F gnm_228

20 CCGGGAGGCCGAGGCAGGCAGATCACAAGGTCAGGCGTTCGATAACAGTGTGGCCAATAT
GGTGAAACCTTGCTCTACTAAAAATACAAAAATTAGCTGGGCATGGTGGTAGGTGCCTG
CAGTCCCAGCTAATGGGGAGGCTGAGGCAGGAGAATTGCTTGAACCCGAGAGGCAGAGGT
TGCAGTGAGCCAAGATGACGCCATTGCACTCCAGCTTGGGCGATAGAGTGAGACTCGGTC
TCAAAAAAGAAAAATAAAAAATAAGACAGAAAAAGAAAAAGACCTAATATCATCTA
AAATGAAATCATACAAACAACCTTTCCATGATGTTCTCAATGAAAAGATTCTTACCAGT
GTTCTCTCTGATTTTGAACAAATGGAAATTTTCCACCAGTATTGGCATGAGAAACCAC
25 GGTGCCCTATTTTAAAAAATTAATCAATCCATGTTGACTTTACTTTCTAGAAAAGGAA
TAAAAAGGAAACTACCATTCTAAAGCAAATATCGATAGACATAGGAGGCAAACAGGAA
CCCTTACCTCAAAGAACTGGAACCTTTTTTGTGTTTTGAGACGGAGTTTCGCTCTTGTTG
CCCAGGCTGGAGTGCAGTGGTACAATCTCGGCTCACTGTAACCTCTGCCTCCCGGGTTCA
AGCGATTCTCCTGCCTTAGCCCCCAAACAGCTGGG

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 229>:

GNMCJ41R gnm_229

35 ACCCTGATGATAAATTAACAACAGAATAAAGGTCACCTCTGGTTTTACCCTAACAAAACCTC
AAAAGGAAGCATCAAAGGATCAAGCTGATTTGAAAGTAACCTAAGTGTATGACAGAACA
AAGCCCAATACTCTTCAAAGAAATACAATAAATACTCAACAATGTAAATCCAC
AATGCTCATCCCCAATCAAATTTGCTAGGCTTGCAACAAAAAAGAAAATATGACTCA
TAACATAAGAGAAAAATCAGTCAACAGAAAACAGACTCAAAAATGACCATCATGAGGGAATT
AACAGTAAGGATATGAAGGCAGCTCTTATAAATATGGAATAGTTAAAGACCCAGAAACA
TCCACCCACCTGTCCCGGGTCCATTCTGTTGCCAGCTTAGGGAAGCCACAGTGTCTAT
40 GGAGCTGAGGTCCAGCTGCTCCAGCTCACTCTCATTAAAGAGCCAGAGCAATGCGCCCCAG
GGAGACGATATGGTGTCTCTCCAGTAAGATGGCATGTCCAAACCTTTAGGCAAAAAA
GGAAATAGATTAGACTGAACACTGTGATGGTATTTACAATGATTTGAATGTTTGTGCCCC
TCTAAATGCATATGTTAAACCTAATCTCCAATGTGATAGTATTGGAAGGTTGGGCCTT
GGGAGATGATTAGGTATAAGGGTGGAGCCTCATGAGTGGGTTAGTGCCTTGTA

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 230>:

GNMCJ41F gnm_230

5 CCTGATCCAAATAACAATATAACAATAAAAAACAATACACATAAAAAATACAGTAGCATT
TTGACATAACATTTGTACATATTTACATAGCACTTATATTGCATCAGGTATTATAACTA
ATCTAGAGATGATTTAAAGTATACATGAGGATGTGCATAGATTATATGCAAATACTACAC
TATTTTATATAAGGGACTTGAATATCCATGGATTTGGTATCTTTAAGAAGTCCTGGAAC
CAATCCTTGGTGGAGGTATCCACAGGGGCAACTTCATTTTATTTATGGTTAGTTCTTATT
TATTTAGCTAATTGTTAGACTTTTCAAGTTGCATTAATAAATGCCTCAATGTATGCCTTT
10 ATACATATACTGTTGGGTACTTGTCTCATTTACTCAGGCTAAATCCAGAGGTGGAATT
TCTGGGTCAAAGAATATAAATACTTTAAAAGCTTTGATACAGATAGCCAAATTGCCCTC
TCAAGAGTATGTACCAACTTATATTCTCAACTACAACAATGAGGGGTACCCTTACCTTG
TATCTTTCCAGTATCGTAAATGGTGATAAGTCTTTATACTTCTTGACATGTGAAGAATCA
ACA

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 231>:

GNMCJ42R gnm_231

CGAAACTGTCTAATGCGTAACCGGAAAAGGCGTTCACGCGCnATCCGGCCACTTTTCAGT
TTTACTCTTTCTCGGAGTAACATAACCGTAATAGTTATAGCCGTAAGCGGTGC
20 TGGCGCGTTTAAATCACACCATTTGAGGATAGCGCCTTTAATATTGACGCCTGCCTGTTCCA
GACGCTGCATTGACAAACTCACCTCTTTGGCGGTTCAGCCAAACGCGCAACCAGCA
GGCTGGTGCCAAACAGAACGCCCCACGACCGCGGCATCACTCACCGCCAGCATCGGCGGCG
TATCGACAATCACCAGATCGTAATGGTCGTTCCGCCATTCCAGTAATTGACGCATCCGAT
CGCGCATCAGCAGTTTACAGCGGTTAGGTGGCACCTGACCGCGAGTAATCACATCAAAGC
25 CTCCTTTGCCAAATGCTGGATCACTTTGTTGAGCTCATCTTTACCTGCCAGATATTCCG
ACAAGCCATGTTCACTACTCACGGTAAACAGGTTATGCGAATAACCACGGCGTAAGTCGG
CATCAATAAATAACACTTTTTGATCGGACTGGCGATCACCGCTGCCAGAGTTGAAGTGA
CAAACGTTTTTACCACTGTCTGGCGTCGCACCGGTGATCAT

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 232>:

GNMCJ42F gnm_232

CCGGCAATGGCTGGAACAGAAAGAGATCCCGGATCCCTATCGTAAAAGTCAGGACGCATT
TGAACATGTCTACGGTATGTTGGAGCGCGCCAGTCAGGAATGGGCGACGCCTCAGCCGGT
AATTTGAGTTTATAAAATACGATGACAATAAAATATGAATACGCCACCAGGCAGCACT
35 CAGGAAAATGAGATCGATCTGCTTCGCTCTGGTTCGGCGAGTTATGGGATCACCGTAAGTTT
ATTATCAGCGTGACCGGTTATTACGCTGATCGCTGTCGCTTACTCGCTGTTAAGCACA
CCAATTTATCAGGCAGATACTCTGGTCCAGGTTGAGCAAAAACAGGGCAACGCCATTCTC
AGCGGCCTGACGGATATGATCCCTAACTCATCGCCGAGTCTGCACCGGAGATCCAATG
CTGCAATCGCGCATGATTCTCGGTAAAACCATTTGCTGAAGTGAATCTGCGCGACATAGTT
40 GAGCAGAAGTATTTCCGATTGTGGGTTCGGGCGAGATTAACCAAAGAAAAACCA
GGTGAGCTGGCGATCAGCTGGATGCATATTCACAATGAATGGTCAGGATCAGCAACTG
ACACTCACGTTTGGGGAACCGGCACTATACACTGGAAGGTGAAGAGTTACCGTCAAT
GGTATGGTCGGACAGCGTCTGGAAAAAGATGGCGTTGCGCTGACTATCGC

45 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 233>:

GNMCJ43R gnm_233

ACCCGGCGGAAACACCCGAGCAGCCGCTCGGTGCCGAACAGTTTGACCAGCCCCGAAAA
CAGGACATACATCAGCCCCCGCAATGAGGCCCCCGCCGCTGCCGGGCCATCTC
CTTGATGACCAGCGCCGTGCGGCAATAAAAGGCGAACGAACCCCCAGGAAATCGGCAC
5 CTGCCCCGCGGTGACAGGTGAAAAATCAGCGTGGCGACCCCGGCCCGAACAGCGCCACC
GAGGGCGACAACCCACAGAAATCGGCACCAGCACCCTGGACCCGAACATGGCGATGGAA
TGCTGCAACCCAGCACCACCCGCGCTGCGCGGGAGATCGGGAAGGGGGGCGGCGCG
GCAGTCTGCGTCATGGGGAAGTGTAGTGGGCAGGGGAGGAGACGAGAGACAGAAACAT
GCTTCTGCTGTGGCCTTCTTTTCGCTGCTCCACGTCCAACGGAGAAACGAGAACGCCAG
10 GGCCGTCGTGCACGAATGCGGAGCCTCGCGTCTGTAGAAATCACGAGCATCCAGACCAC
CCCACGCACTTGAGGAACACTGACCTGCACGCGCCATCACCGCAAGGTGCATAGCGCCAC
GTTTAAGGCCCTGCCCCTCTGGGGTAAGGGTTTAGGGGCGGGGCAAAAAGCTAAAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 234>:

GNMCJ43F gnm_234

CCCGGCTGAACAACCTGCTGCTGGTGCTGATCGGGCTGGTGGTGGTGTGACGGTGCAGC
TCGTGGGGACCACTCAGCGTCACCTGCTGATCAGTCCAGCGCCGCCCGCCGCTGCT
CTCGCGGACCTGCGGACCATGATGCTGCTCGCCGCGCTCTGGGCATCCTCGGCGGGTC
AATGGGCTGTATGCCAGTTATTACCTCGACACCGCGCGGGGGCGACCATCGTGTGGTG
20 AACACGGCTATTTTCTGCTGGCGCTCGCGTTTCGGCGGAAGTAAGGGCGCTTCCCTAAC
CCTCCACGGGCAACAAGCGCAATTGCCCCGTGTCCGCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 235>:

GNMCJ45R gnm_235

GTAATCCAGAACTTTGGGAGGCCGAGGCAGGTGGATCACAAGGTCAGGAGATCGAGAGC
ATACTGGTCAACATGGCGAAACCCATCTCTAATAAACTACAAAATTAGCCAGGCGTG
GTAGCGCACGCTGTAGTCCAGCTACTCAGGAAGCTGAGGCAGGAGAATCACTTGAACC
CGGGAGGCAGAAGTTGCAGTGAGCTGAGATCATACCACTGCACTCCAGCCTGAGTGACAG
AGCCAGACTCCATCTCAGAAAAAATATATATATATATATAAT
30 ATAAACCACTTAGGATCAGACTTCAAGTTTCACTGAGCTGGAAGTGGCTGCCAATGCT
CCCCAGCTCTTTAGCAAAAGACATTTACACACGATATTGTATTGGAGGCATTTGGGGAAA
ATGAAGGAAGTGGGGAGCATTTACAGGGTGCAGTGACTTAACATCAAGAGCTAATTACA
AGAGCCGTGGGCAATGACAGATGCCAAACAAGATGGAGGAATCAACTTTTATATAGACT

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 236>:

GNMCJ46R gnm_236

CCTTCAAGGTGCCAGCTCTGGAACGAAGGATGCCCTTGGGAGGTGATGACACTCAGGTA
CACGGGTGCTCAACAGATTGCTTCCTCTATCCTCAGACGGTCTTTGCATGCATGCAGCC
ATTGGCACTCCCATTTGTGTGAAGGAAACAGCCAGGGTCACACAGCTGGTCAGCAGCA
40 ACATAGCTGGTCTCAAATCTAAGGTGCCTGACCATGCCTCCATGAGGGACCGCCTCCAAG
GGAGGTTGATCCTGGCTTTGGGGAGCCTTTCCTGGGCTGCACGAATAACCTCCATTGTTT
GAGACCCCAACTCTGCTCACATCTTCCCTTCCCTATCTCTGCTTGGGCTATGATCACGG
TGACTCTAGCAGCCCTTCATGGACATTATAGTACTCTCTGCCATTCACTTTTGCTCTAAT
CTGACTTCAACCCCACTTACTTGGTCTCTCCTTTTACAACCACCAACCGAAATCTAG
45 GGCTGCTTTAAAAAATTATTTTTTGGAGACAGAGTCTCATTCCATTCTGTACCCAGGC

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TGGAGTGCAATGGTACGATCTCGGCTCACTGCAACCTCCGCCTCCCGGGTCCAAGGGATT
GTACTGCCTCAGCCTCCTGAGTAGCTGGGATTACAGGCGTGTGCCACCATGCCTGGCTAA
TTTAAGTATTTTATAGTAGAGACGGGGTTTCACATGTTGGTCAGGCTGGTCTCGAACTCCT
AACCTCGTGATCGCCTGCCTAGCCTCCAAAGTGCT

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 237>:

gnm_237

10 CCTGGTACATTTACAAAAATTAACCTGACTTATTTTGTTCAGCAAATCTCAATATATTT
GAGAGCAATCAAATCACACAGCATGTTTCTGATCATATAACTGTGCTAGAAGTCAATGAT
TAAAAGCTAATTCAAAATTTATTATTTGGAAATCAAAGTGCCCTTATAAGACATAA
ACATAAGAAAGAATCCAAATGAAACAAGATTGCCTTTCAACTCAATGATGAGATCATAA
CATGGCAATAAAATGTCTCCCTCTGGCCTGGGAATTCCTCTTTGTGGCACAAGGTTGTGT
15 GATCTCAAATCACCGTAACCCACCTAGACATTTTAACATCCGAAACCGAGTGATGACGT
CCTTATCTATATCATCTTACTGCCTGTGTGTGTGGACTTTAAATTCTGAACCCAAATGAG
GGGGAGAAAACCAAGTTGACTTTCATGACTGAGCTCTCAGGGACGTCCAAGGAATCTGTG
CATTCAAGAAACAAAGTTCATCAGCTTCTCTCCTAAGGTATTGGCCACAATACCCAGA
GGGCTTGGCAGCATCATGTGTGATGGGTGGGGAGCTCCAAGCAGGTGGGCAGGACCCAGG
GGCCTGGTGACCAGGACAGACCCCACTGTCCATCACCTTTCTGGCCCTGTCTCTGCT
20 AAACCTCCACAGGCCTTCTGCACGATCACACAGAGTATGCCCAAATCTCTCAGGCCTC
TGGCAGCTGAAAACCAAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 238>:

GNMCJ47R gnm_238

25 CGGGGGGAAAAAGAATAAAAGGATTTAAAAATACAACTATGTTATTTTGGGATGGAAA
TTCATCTGATATACACACGTTCAAGGTGTCCAGATTAGTGCCTTATATCACACCCCAACA
CAATACACAATTATGGTGCAAGCCTGTAACTGACCTAGGTGATGAAGGAATTTAAATAT
AATAAACCAAGCCCTTTTACTACATACTTATATAAAATCGACAACCTATCAGATGATGCT
CTATGTCAGGTAGCCTCAACAAATCAACATTTATTCTAGCTCTGATATGGTCTGGCTCT
30 GTGTCCCCACCCAAATCTCACTTTTATAATTTATTTTGTGAGGCAGAGTTTGTCTCTT
GTTGCCCAGGCTGGAAATACAATGGCAAGAAGTTGGGTACCCGAAACTCCGGCCCCCAGG
TTCAAGAGATTCTCTGCCTCAGCCTCCTGAGTAGCTGGGATTACAGGCATGTGCCACTG
TGCCAGCTAATTAAGTATTTAAAGTAGAGATGGGGTACTCCATGTTAGTCAGGCTGGT
CTCGAACTCCTGACCTC

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 239>:

GNMCJ47F gnm_239

40 CGGGTCAGGAAGGGATTCTACGGAAGTGATTTTTCCTGTTTGGCCTTTCTTAAGGGCAG
ATTATAATTATAAACAGTTAAAACCTTGTTTAAGGAGGCCCGCACTAAGGTGCAGTGGGA
ATGAAAGGAAGTGGTAGATTCTAGTGACATTGTGAGGAAAGGTGAAGTGGTCCCTTGAGAC
TGGTTTGGAGGAGGGGAGGCAGACAGTAAGGGAAGGAATCCTTCAATAGTTGCTCCCTG
TGGATCGAATCTTGGTGTGTCATTAATGGTAGTTAGAAATATGAAGAGGAGGCTGGGT
GTGGTGGCTCACGCATGTAATCCACGCACTTTGGGAGGCCGAAGCGGGCGGATCACGAGG
TCAGGAGATCGAGACCATCCTGGCTAACATGGTGAACTCTGTCTCACTAAAAATATAAA
AAATTGGCCGGGTATGGTGGTGGGCACTATAGTCCAGCTACTCGGAGGCTGAAGCAGG
45 AGAATGGTGTGAACCTGGGAGGTGGAGCTTGCACTGAGCCAGATTGTGCCACTCTGCTC
CAGCCTGGGTGACAGAGCAAGACTCTGTCTCAAAAAAAGAAAAAATATGAAGAA

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GAGGCAGTTGGAAGAGTAGTTCCATCTTGCCAGGTTCAAGTTGCTGGTGGGCAGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 240>:

gnm_240

5 CGGTAGGTTTCAGTTCAGCTCTGCCTCTTATTGACTGCAACCTCAGGCTTAACCTTTCAG
TCTCTGAGCCTCAGTTTCAACTCTGTAAAATGAGGTGGCTATACCATCTCAGGTTGCAGA
GAGAATTAAATGAAATATAAGTGCATGTAGAGCATTGAACCCAGGGCCTGGCACACACAG
TGAGTACACAATGTTAGCCAGGTAGCTTCATAATGCATACTGATTGTCAATATTCAGACA
10 ATGCAGTAAAGTGTTACCAAAAATAAAAGTAACTTATTTGCATATGTATTCTTTCAATC
TTTATTTTAAACAGGGTAAAATATGCATATTCTTTATAGCCAGTGTCTTCTCTTCA
TAGTATATTGTTAAATAATTTTACTTGGACCGGGTGCAGCGGCTCACACCTATAGTCCC
AGCACTTTGGGAGGCCGCGGTGGGCAGATCAGAGGTCAGGAGTTGACACGAGCCTGGCC
AATATGGTGAAACCCCATCTCTACTAAGAAATACAAAATTAGCTGGGCATGGTGGCACAC
ACCTGTAGTCCCAGCTACTCAGAGGCTGAGGCAGAGGAATTGCTTGAACCCGGGAGACAG
15 AGGTTGCAGTGAGCCAAGATTGTGCCATTGCACTCCAGCCTGGGGACAGAGTGAAACTC
TGCTCAAAAATATG
TGTGTGTGTATGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 241>:

20 GNMCJ48F gnm_241

CCTGACTCAATGTCACTCAATTGATTCTGAGTTCAGTCTGATTACATCCGACCAAAGTG
CTTTTCTGAAGTCTACTCCGTTAATCATGCTGGTGATGATTTGTGCGGCTCTGGGAC
AAACTCCACCTGGCTGAAGATAAAGCAAATCTGCGGTGACTTAGTCCTCCTGTCAATTCC
25 CATCAGTTCCCCACTCTCCTCCTCTGCCCCCTCCACAGTCTCCCATGCAGGCTGACACCAT
ATGACGGCCTTAATGGAGTCCACCGAGTATTTAGGTTCTCTCCTGGGCCACTTGAAAGT
GGATGTACCCATGGGATTTGCTTTGACCCAGGAGATGTGCGTGGAGTGAAGCGTGTAC
CTCGAGGCAAAAGAGTTGGGAGCCATTGAGACGGGCCACTCTCTCCTTCATCTCTTAGAG
CAGCTGACAGCTCCCATATGGAGGCTGCTCCTTATTCTCGTGGCAGGATGAGGGCATGT
GGGGCACAGGGCACAGGAGAGCCATGGAGGATGTGCAGCATGGGCAGGAAAAGAGCCTTC
30 AGTGGTGTACATTTCCATAGTTTGGGGCTGTTTCTTACCTACAGTGATACCTAGCCCATC
CTAACAGGCATGCACCATCTACTCCACACTCTGTGATGCAGACTAGCCTGCCGTGAGAAC
ACGAACTGGTGGTCAGACACAGGTAGGTTTCAGTTCAGCTCTGCCTCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 242>:

35 GNMCJ49F gnm_242

AAGTAAGTTCGGAAAAGTACATTTATATGTACACCTTACTAATACACTTGGGGTAAGGTG
TATTCTCAAACCTAATGTTTCATCCAGCCAGTCAAGGTGCCTTGGAATTTGTGTACCCTC
CTCAGCCCAATAGACCTTGGGCCTCTGAAGAAAAGTATTGGAAGAAAGTTTCAAGTGGGC
40 AGTCATGGGATTGTTTTAGTGTGGAAGGGCTAAGAAAAGAAAAGAATTGTGGACAATA
AGATCACATCTCTGATGTGAGCAACATGATTTAAAGGGATTGTTGGCTATGAACCAAAA
ATCATTAAAGGGTATTTTTGTACTGGAGAAGGCCAAGGACAAAAGATATAAAGTTTCCCA
TCCTTGGGATCATGAACTCAAAGCAAAGCAAATGGATTAATAGCTACTTCTATTTATA
GCTACTTCTGTTAATAGCTACTTGAGCATGAGCAATGGTTAGATTTTAATTCTAGAGTTT
ACAGTGGAGAAATACACACATTCTAGGATTACTTAACTCACTAGTCAACCTGTCCCTCTC
45 CTTATGATGTTGACCCAATGACACTAAAATCCCTTGGGCATCATGATTCTTGAATGCGGT
CTCCAAAGAATGCTGCCAACACAAAGGGGATCATGAAGAGACTGTGGGCCTTGCTTCCAA

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TTTTCTTCTTCTTCTTCTTTTTTAAGTCATATGTGCCCTGACTCTTCTGGCCAGTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 243>:

gnm_243

5 GTACCCCTACTAAAAACACAAAATTAGCCAGGCATGGTGGTGCATGCCTGTAATCCCAGC
TACTTGGGAGGCTGAGGCAGGAGAATCACTTGAACCTGGGAGGCAGAGGTTTCAGTGAGC
CAAGATCGCACCATTGCACTCCAGCCTGGGCAAAAAGAGCGAAACTCTGTCAAAAAAAG
AAAAAGAAAGAAAGAGAGAGAGAGAGAGAGAAAGCAGAGAGGCTACTGCAGAGAAAAGTC
10 TAGAAGGATGGGTTTCATGGGTTTCATCGAGAGACAATAGCTTAACAACCAGCACACCATAG
TTGGCAAAACACTATCATTGAAAAAAAACATGCTCAAAGGGGAAATGCCAGTTTGGGT
AAATATGCTTTTGTGTGGAGAGAAAGAATTTGGAACAGGCTTTTCAGACCCCTTAAGG
CCCAACAAACAAATTATAATTTAGACAAGTCTGGGATTCTTCACAGCTCAGCTTGTGGTG
ATGGTATTAGCTTCACAACCTCAAACAAGTTAAGCTGTCTGTGTGAAATCTCCTCAACAA
CACCTCACTGGCAAACCTGGAGGTGCTGAAAACAGAGCTTTCAATTCTTGTGTGCAACCA
15 AGGGAGTTGAGTTGGCAGATGGGCACTGTGTCCAGCCTTGGGAAAGGACATCGCAGACTT
TGCATCCTAAGAACTCATAACCACAACGGCAAGTAAGACACAAGCTCTTGAAAGTTTCC
ATCACAGTGCAGCACAAATGACCTTGGCTATGTGCCCTGTTATTGCTGGTCCCTGCTTAA
AAATCTCCTGTGACTTCCAACCACACAAATTTCTACCTGGTTGCAAAAATGCCCTTGAT
AATTCACCCCTCCCTCTATCTTGCCCCCTTTACAATGTGGCTTGGCAGCTCCTCCCATCA
20 AGAGTTAAAATCTATTTCTCACCCCTTGAATCTAGGCTGGCCATGGGACTTGCTTTGGC
CAATAGATGTGGCAGAAATTATGGCGTGACAGTTCTAAGCATGAGTCTCAAGAGGCTTTG
CATGCAGCAACTTTCTCTTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 244>:

GNMCJ54R gnm_244

AGGCCAAACCCCTTAGGTTTTAGGGTTTTTTCTTTTTTGTAGATGGGAATCTCCCTCTG
TCGCCAGGCTGGAATTCAGTGGCATGATATTGGCTCGCTGCAGTCTCCGCCTCCTGGGTT
CAAGCAATTTCCCTGCCTCAGCCTCCCGAGTAGCTGGGACTACAGAAGTGCACTACCACA
30 CCCGGCTAATTTTCGTATTTTAGTAGAGACGGGGTTTACCATGTTGGCCAGGCTGGT
CTCAATCTCCTAACCTCATGATCCGCCCACCTTGGCCTACCAAAGTACTGGGATTACAGG
CGTGACCCACCTCACCTGGCCAAGTATTGGTTTTCTTAACAGATTTTGCCATTGGACAGAA
CGGACCTGATAGAGCAAGATGTCAAAGACTCCCTGACAAGTAAAAAAGGGGCCAGGCAT
GGTGGCTCACACCTGTAATCCCAGCACTGTAGGAGGCCGGGGCAGGTAGATCACTTGAGC
CCAGGAGTTTGAACAGCCTGGGCAACATGGCAAGACCCCATCTCTAGAAAAACAAAAA
35 TTAGTGAGCAGCACAGGCCTGTAGTCCCAGCTACTTGGGAGGCTGAGGTGGGAGGATCCC
TTGAGCCCCAGAGGTGGAGGCTGCAGTGAACCAAGATCACGCCACTGCATGCTGGCTGGG
GTAATAGAGCAAGACCCTATCTAAACAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 245>:

gnm_245

40 CAGAACAAAGGGGTCTGGGAAGAATGACAGCATGACTGAAGGGTCCGTCTGGAAAGGAA
GGATAGTGTGCCACCAGGAGAAGGAGAGCCACCCAGACACCAACAGCTGAGACAATCCC
AGCCCTGGGTTTCATGGCCCAAAGTCACAGCCCACTACCAACCCCAAAWACATACCCCT
GTGACATGTGGCTGAGCACCAGACATCTTCTCTCACCTTGCTGAGGATACCTTGCTGCT
45 GGGCAGGTGACAAGTCGGATACATACTGGGAGACGGCACTTCTCAGGACCTGCGAGATGT
CCTTGCGTTTCATGCTGCAGAAGGCCTGGGTGCTGACCCAGCCAGCAGTGCGCCCATCT

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GGCTGACATTGTAGAAAGACAGCACCTGGAAGAGGAGCGGTGCGCAGTCAGGCTCTGCTC
CCGCCTTTACCTCTCCAACGTGCACTCAGCCCATCTATGTGCCAAGTATAGGGATGGGT
GACACCTTAGGGGCACAGCAGTGAGCCAGACAGATGCTGCCTCCACAGGCCTTCCTTCCT
TCTATCAAGAAAGAGAGTTGGCCAGGCATGGTGTCTCAGCCTGTAATCCCAGCACTTTGA
5 GAGGCCAGGCGGGTGGATCACCTGAGGTCAAGAGTTCGAGACCACCTGGCCAACATGGTG
CAACCCCATCTCTACTAAAAATACAAAAATTAGCCAGGCATGGTAGCAGGTTCTGTAAAT
CCCAGCTACTTGGGAGGCTGAGGCAGGAGAATTGCTTGAACCCAGGAGGCAGAGGTTGCA
GTGAGCTGAGATTGTACCATTGCACTCCAGACTGGGCAACAAGAGCAAACTCTGTGAGA
AAGAAAGG

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 246>:

GNMCJ56R gnm_246

GACTACAGGTATGCACCACCATATGCTGCCAGGCTGGTCTTGAACCTCTGGAGAGAGAT
ACATACACACACACACACACACACACACACACACACTTTTTTTTTTTTTTTG
15 AGACACAGTTTCGCTCGTCACCCAGGCTGGAGTGCAATGGCACAATCTGGCTCATTGCA
ACCTCTGCCTCCTGGGTTCAAGCTATTATCCTGCCTCGGCCTCCCAAGTAGCTGGGATTA
GTAAGGCACCTGCCACCATGCCTGGCTAATTTGTATTTTAGTAGAGACAGGGTTTGTGTC
ATGTTGGCCAGGCTGGTCTCAAACCTCTGGCCTCAGGTGATCCACTTGCCTCGGCCTCCC
AAAGTGTGGGATAACAGGCATGAGCCACTGCGCCGGGCCCATACATATGCATTTTAAAA
20 AATTTATTTATTTATTTTCGAGACAGGGTCTCACTCTGTTGCCCAAGCAGGAGTGCAGTGG
TGCTATCTCCCAGGCTCAAGCAATCCTCAGCCTCCCGAGTAGCTGGGACTACAGGTGTGT
GCCATCACACCCAGATAATTTAATTATTTTATTTTAAATTTTGTAGAGATGGAG
TTTACCGTGTACCCAGGCTGGATATTTTGTATTTTGTAGGCCTGTACAGTTTCCA
AAGTTGCAACCTTTCCCCCTCCCTGAGAGTAGGG

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 247>:

GNMCJ56F gnm_247

CTGTTTAAACACAGTAAGCAGGAGCTCGATAAATATTAGGAATCATATTACGCTAATTGTT
TTACAAGGTTTGCTTCACTTACAGGTATAAATTAATGAAAAACATAGCATCCTAATGAC
30 TCTGAAAGTTAAACGCCAAGAGTGCTATGGGGTTAGGGATTTTAAAGTGAGCAAAAT
AAAGACTGCGAAACAAATACGTGTGCGAAACAAATTTCAACAAAAAGATGTAATATT
CAATTTGCCATGAGTGACAACGTTTCGGCTGATAACCCACATAGCCCAGGGAAATCCCTTC
CAAATTTGGACGAAGAAGAGGGAAGGAAGAGGGGTCAAGGCGCAGAAGGCAGTACCCAGG
CCTGGGAAATCACGAAGAGACACAGTCGGGAAAGTGGGCCTCCAGAACAGAGAACATACT
35 CACTTTTCCAGGCCCCACCATGTCTATTACCCAGTTAGGAGGAATGAGCTCATTCTGT
GAACGTGAGATGACCCGCTGACCCCGTGCTCCTATCACACGCCATTAGCTTTGTCCACAT
CCTTTCAATCCGCTCCTCTAAGCGCGGTCTGAGCTTTGGTCCCAGACGCGCAGAAGGAA
GCGGCCTGAATCTTACCCAGTCTCGACGCGCCAGCGTCTTGACTGCAGAGGACGAAGC
GGCCGCATCTCCCGACAAACAACGTGTGAAGCAGCGGTGCCGCCATT

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 248>:

GNMCJ57R gnm_248

CAAAATTGGTGCTTAACGAATATTTGTTGGGTGGATGAAAGCAAGCACTGACTGTCAACT
ACTATCACTGGGGGTGATTAACCTTTGTCTCCTCATGCCTGGCCCCAGTCTGCACTTAGTA
45 GTGTCATGGTAATAATAATAAATATCTAACACTTGGACAGGCATGGTAGCTCACATCTA
TAATCCCAGCACTATGGGAGACCAAGGCAGGAGGATCACTTGAGGCTCAGAGTTCAAGAT

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5 CAGCCTGGGCAACACAGTAAGACCCTATCTCTACAAAAAATAAAAAATTATCCAGATGT
GGTGGTTCATGCCTGTAGTCCCAACTACTTGTGAAGCTGAGGTGGGAGGATCCCTTGAGT
CCAGGAGGTGAGGCTGTAGTGAACCATGATTGCTGCACTCCAGCCTGGGTGGCAGAGCG
AGGCCCTGCCTCTATAAAATCAAATTTTAGGCCGGGGGAGTGGCTCACGCCTGTAATCC
CAGTATTTCCGGGAGGCCAAGGCAGGTGGATCACCTGAGGCCAGCGTTCAAGACCAGCCTG
GCCAACATTGTGAAACCCGCTTTACTAATAATAACAAACTTAGCCAGGCGTGGTGGCAC
ATGCCCTATAATCCCAGCTAGTCAGGAGGCTGAGGCAGGAGAGTTGCTGTAATCTGGGAGG
TGGAGGTTGCAGTGGGCCGAGATCATGCCGTATACTCCAGCATGGGTGACACTCCAGCA
AGACTCCATCTCAGGGAATAAAAAAATCAAA

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 249>:

GNMCJ57F gnm_249

15 CCAGAAATCTGCCCCATGATCCAATCACCTCTCACTGGGCCCCACCTCCAACACTGGGG
ATTACATTTCAATAAGATTTGGGTGGGGTACACATCCAACTATGTCAAATATAAAGTTT
AGTAAAACTTAGAAATAGCACCAAAACCAAAAAGGGGTAGGTACACATACATTTTTTTT
GTTTTTTTCTGAGACAGGGTTGTACTCCCATCACCCAGGCTGGAGTGCAGTGGCATGCTC
TCGACTCACTACAACCTCAGCCTCCTGGGCTCTGGTGATCCTTCTGTCTCAGCCTCCTAA
GTAGCTGGGATGACAGGCTCATGCCACCAGACTGACTAATTTTGTATTTTGTAGAG
20 ATGGGGTTTCACCATGTTGGCCAGGCCAGTCTTGAGCTCCTGACCTCAAGTGATTGCTC
GCCTCGACCTCCCAAATGCTGGGATTACAGGTATGAGCCACCACACCTCGCCTAACCTA
CATTTTTTGTGATATTACCAGATTGCTCTGCTAATAGTGCACAGTTTGACAGTCCCACG
GAAAAATGAATGTGCCAGCATTAAAGTATTAGCACTTCATTTATTTTGTACAATCTGAT
GGGTGAAAAGTGATTTACTTATGTTTTTTAGACTTTATTGGATTTTCATTGAAGTTGAGT
ATCATTTTATAGGATTCTATATAGAGACCACATTAGTGGGACTAGGGGATAGAT

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 250>:

GNMCJ59R gnm_250

30 ATCAGAGTCACTTCATCTTCTGTGAAATTTGCAAAGATGCTAGGAGGTTCCCTCCTGCT
GGGACACCCAGCCAGACACAAACCATTAAATTCACAATTACATGGAGTTTCACTGTCTG
CAAGGCTGCTCCATTTAAGCTCTGGGTCATGAACACATAACTCTAGGCATACTGACACTA
GCTGGGAGATTTCCACCAAAAAAAAAAAAAAAAAAATGCCATTTTCATGACTATTAATCCA
AAATAGGTAAATGTGCTGGCTTATAGAATACCAGCCTGATTACAAATGCTTGGTGTGG
AATGGCCCAGCTCACAGTGGTTGTAGAAGTCCAGTAGGCCAGGCTTTGTGGCTCACTCC
TGTAACCCAGCACTT

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 251>:

GNMCJ59F gnm_251

40 CCGCCAAGCCGGGCTCCGCACTTGAGGCGCGCGGGGGCCTGGGCGGAGGACTCACGGG
GCAAAGCGCTGGGGGAGCGGGTGGGCGCCACCGCTGGGCCCTCCCTAGGGAAGGGGTGCA
GGTGATGGATGGCGTGGGGGACAGACCAGAGAAAGAGGCTGGGCAAAGTGTGGGTGCAG
CGGCTTTAAGGGCTCCTGGGATTGGAGGGCACTTGGAGGGGGGGACGATGAACTTCGA
GAAAAGGGATCCAAACTACTTAGTAATATAATAACAGCGATGACAACCTGTTGCAATAAC
TATCACAATGATTATTTGTTATAATAATATAGCAGCAGTAAAAACAATAGCATTAGTAAT
AATAGCTACGATTTCATTGCATTCTTATATGTGCCAGTGCTGGGCTTAGTTCTTTATGTAT
45 TTTATGTATAAAGTAATGCCTACCTCATAACAGTTGTGTGGAAGAAATGAAAAATGCAG
GTAAAGGCCGGGGCTCACACCTGTAATCCCAGCACTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 252>:

gnm_252

```
5  CGGTACCCGACCATCATCATCGTGGGACTGACTTTGGTGAAGTCCTTGGTTACATGTCA
   TTATTGCATTTCCGACAAGTTATAAAGTTGTCATTACCCTCTGGATAGTTTACCTTTGGG
   TGAGTATACTAACTTTCTGTAGAGGTATACTTGTAATCACAAATAAGAATAAATTATATA
   AAACAATTCACATTTCTGGACTTCATTATGAATATGTGGTTTTACCCAAAAAATCAGGGA
   AATGATTTATTAGTATAAGAATTATGAAAACATCTGCCATTTGCATTATGAAAATTAAT
   AGGTCGGTGTTTTGTTAATAGAATGTCAACAGAGCTTTTGGTCAAAAATAAGTTTTTTA
10  ACCTTTGTGCTATTATACAAATGGAGTATGAGGTTTCGTCACTTAAATAGGAAATTCT
   TTCTAAACTCTTCTGCTTTATAGTTCTATCGTATGGGTGAAGGAAAGCTTCCAATCTCC
   TCTCTGAAGATTCAGTGCAGAAATGAGCTGACAACAGACAGCTTAACAGGAAAAGAAAAA
   CATAGAACAGGCATAAACATGGGAACAGCTGAAAAATGAGACTGCTAGAAGGGCCGGAT
   GGCTGATGCTTAAAGAGCACCTCTTCTGAGGGGAGAGGGAGATAGATGGAGATGTAGGC
15  CATTTAGAGGGGCAGCAAATGATTTTTAGGGGAAATGAAAGAG
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 253>:

GNMCJ61F gnm_253

```
20  CTGCTTCAGCCTCCCAAAGTGCTGGGATTACAGGCATGAGCCACCACACCTGGCCTGAAA
   TAATATCTTTCAAATTCTTTGTAGAATTGTTTTTTCTGATTTCTGCACATAGGATAAA
   AAAAAAATCATGTACTAGGATTTTCGAGAGAAGCAATGGGTAATCTAAAAAGATGAAAAGA
   GCAACCACGTCAATCCCACAGCTACTGCTAGATTTCATAGGAAAGGTAGCTGGCCAGTT
   TGGAGCTAGGGGAAATGTCAAACACATGAAGAAATGAGAAGCCAAGAAATGCCATCACGC
   ATGAATGCTTCATGGCAGCCATGATGTCCCTGCTAAGGAGGTAATGGTATAGATGACTAG
25  ATGACAAGGACAAAGATGAGAGGTGCGAAGTTGTCCAAGTCCAACAGCTCAACTGAACTT
   TCCTAAGTGGAATTGTTAAAAAGTGGTAAATTTAAAACTTCACCTGGCTCACGTGGTGG
   CTCAGCTTGTAATCCCAGCACTTTGGGAGGCTGAGGTTGGTGGATCATTTGAGGTCGGG
   TTTTGAGACTAAGCCTGGCCAACATGGTAAAACCCC
```

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 254>:

GNMCJ63R gnm_254

```
CGGCGCAAATCACCTGGATGGGTGTGAAAGATTCCGACCATACCCGGAAGACGGAACGC
GCATTGAAACGGAAGGCGACGGAATGTGCAAACGCGACTTGGGGTGAAAACCTACCTGA
ACAGCCATCACCAGCGTGACGATGGTAAACAGCGTGAGTTCCAGCCTTACATTGAAGCGA
35  ACTGGATCAACAATAGCAAAGTCTACGCCGTGAAGATGAATGGTCAAACCGTAGCCGTGA
   AGGTGCGCGTAATCTCGGTGAAGTACGTACCGGGGTTGAGGCGAAAGTAAATAACAACCT
   TAGCCTGTGGGGGAATGTCGGTGTGCAACTAGGTGATAAAGGCTATAGCGATACTCAGGG
   CATGCTGGGAGTGAAATATAGCTGGTAAACCGTATAAGCCGCATGTCGAGATGGCATGCG
   GCTTAATATTGCCGACTTCAAACGGCGCATCAACGCCTTATTTAAATCCTCCTTTTATC
40  CGCGATCGCGGATATCGCAGCGTTTATCCCGTAGAGCGGATAAGATGTGTTTCCAGATTG
   ACTTATCCTCACTAAAGGATAAAACGCATAATATCCCCTTAAGCGGATAAACTTGCTGTG
   GACGTATGACATGATGAGCTTTCAGAAGATCTATAGCCCAACGCAATTGGCGAATGCAAT
   GAACTGGTTCGCCAGCAAAATGGCTGGACGCAGAGCGAGCTGGCGAAAAAATGTTAT
   TAAGC
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 255>:

GNMCJ63F gnm_255

5 CCGGCTTAACCGTCCATGCAACCTCAACACATTGCTTTCAACTGCCGTCAACACGTTCTC
CGGAAATCTGTGCGTAATGAAGTCTTCACGTTATCCAGTGCTGCTGGAATCATTCTGGC
AAAGTCACTCAGGATTTTCATGCATCTGCACCTCCGGGAATCTCAGCACCTTTGCTGTGCG
CAAAAATGTGCGGATAAATTTTATCGATTGCCGTTTTTTGCTTTGGATGCGTTAAG
CCCCATTGCCAGTTTGAGATCGCTGATGTGTATTCCCGTACCGCCAAGGACCGGAAATGC
10 TGAATGATGTCGTAAATGGCGTGAGTCGATAACTGCCGCCAGCCTGAATAAATACGGA
GAAGTTTTTTGCATGACCGTCCGTTGCGCCAATCAACCACTGGAAGACCTGGAATTCAT
AAAATCATAGCGATCTTTCAGCGCCTCGCTGGACCCCATCAAAAAGCCATGATCCGCGC
GATGCCCTGGGCCTCCATCTGATTCAATTTACCGATGAAGGTAAACCGAATGTCTGACA
CATATCCTCTGTGGCAAGCGAAGTAAACCGTTCGCTCAGCATTCCAACGCCTGTCAAA
ACGTTGACCGCTAACGCGCGCACATTTCCCGCTTAATGATTCTGCGTCCGGAACATT
15 CAACCAAGTCTTTTCGCCAGCAGCAGACAGTAATACTCATTATCACCCTTTGGCTGAG
ATCGAGCGTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 256>:

GNMCJ68R gnm_256

20 GTACCCCATACAGATCACCTGGGGATCTTAAATGCAGATTCTGATTCAAGGAGCTCTGGT
TGAGGCCAGGACTCCCATCTTCCTCTTCTCCTCCTTCCCTTGGCCTCCCAAAGTG
TTTGGATTACAGGTGTGAGCCATTGCGCCAGCTGACGCTGCACTTCCAACAAGCTTCCA
GGTGATTCTGGAACCGCTGCTCTGGTGAGCACACCTGGAGCGGCAGGAGATAAAGCAGTG
25 GTTCTCAAACCTGCCTCTAGATTAGTAACATCCCTGCCAGGTGCCACCCTCAGAGAATCT
GATGTTATTGTTCTGGGGTGTGGCCTGAGGTATGGCCTGATTTAATGCTTCTCAGGTGA
TTTCAATGCAGCCAGGATTGAGAACACTGGATTGCAGGGTGTTATGAGTTCCCAAGACC
AGATGAGCAAAACAGCTCTCTCTCATTTTCCTTCCTCTCCATCTCTCTTCTTCTCTCC
AGTCAAGTCTCAATCTACCCCTTCCATTCCACTTTTTGTGGCCCTTTTCAATTTGCTT
AAAATCGAAGACGATGAAAATAATATTAAATGAAATTTTGATAAAGCCATCAATAA
30 TTTACAGCAGTATCCACACATCACCATAAAGTCCCCAACACATTTGACATTTGAGAG
TGTGGTCATCTATTTAGGTCAGCGCAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 257>:

GNMCJ68F gnm_257

35 CCTTTACTCTCTTAAATATCTCTTGACCTCTTTGCACATTTCTATGATCATTTTAA
TAATTATTTTATTGCAATATGCCTGCCTAATGATAGTAAAGTGTGCGTTACAGCTGCTTT
CGGTAAGGAATGTGATAAAGTCACCTACTATACAATGAGCTCTGTAACAAAAACAAGAA
TGGTTCATATTTTAACACCCGAATTTACGTAATAACGTAGTCATTTCAAGGCAGGTGCACA
AAACGGGTTTCTGGCAATATGAAATAGCCACTGGGGGGCAGCAGAGTGAAGTAGAAGAA
40 ACAACTGTCAAAGCGCCTGGGTTCTCTAAGTTCGGCAACTGCCTTACCTAGAAATCAGTT
TCCACATCTGTAAAACGAGGGGTGGACTACAGTGGCAGCTCCCAAAGTGTGGAGCACAC
CCAGCGGCATCTGCAACACCTGGGAATTTGTTAGAAACGCAGATTGCCAGGCTGCTCCCG
GACCTCCTGAATCAGAGACTGGGTGGGGCTCCGAAATCCAGGGATCCCCAGACTCCGGGT
CACAGATGGGGACCACCGGACCTGGCCTGTAGGAACCAAGCCACAGCAGGAGGTGAGC
45 AGCAGGCCAGTGAGCATTACCGCCTGAGCTCTGCCTCCTGCCAGATCAGAAGCGGCATTA
GATTCTCCTAAGAGCAAACCTATTGTGCACTGTGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 258>:

GNMCJ71R gnm_258

5 AAAGTTGGAGGGTACTTTTGTGATGGGTTTGGTTTAAATTGGTTTAAATATAAGACACA
TAGTCCATAGAGAATTCACCTATGGACTATGCTGCTAAGAGAATCTCAAAGAGATGCACT
GTTATGCTCCAGAGTTTTGTGAGAGGCCACTAAGGTCAGGAGACACATGCCATATATATC
AAGATGCTGTCAACAGAGAAAACCAAGTGAGGTTTCAAACAGAAGCCCCGCTCCATTCAAC
CAGGCAGCCACTCCTCATTGCAGGTGCTGACCTGGGCTTTGGCTGCTTCTCACATGGGCA
10 ACTCTATACACTCTATTCTGGGAGAAGGGCAGCAAAGACCCACTTATTAAATGATGTTT
AACAATCCTCGCCGGGCGCGGTGGCTCACGCCATAATCCCAGCACTTTGGGAGGCCGA
AGTGGGCGGATCATGAAGTCAGGAGATCGAGACCATCCTGGCTAAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 259>:

GNMCJ73R gnm_259

15 ATTTTCATGGACAGCAACTCATCTCCTGGTTTTATTTTTATTTTATTTTATTTTATTTGACACAGG
GTCTCACCCTTACCCAGGCTGGAGAATAGGTGTGATCACGGCTCACTGCAATCTTGACCT
CCCAGGCTCAGGTGATCCTCCCACCTCAGCCTGCTGGGTAGCTGGGACTACAGGCATGTG
CCACCATGCCTAGCTAATATTTTGTAGTTTTTTTTTTTTTAGAGGTGAGGTCTTACCATG
CTGCCCAGGCTGGTCTTGAATTCCTGGGCTCAAGTGATCCTTCTGCCTTGGCCTCCCAA
20 GTGCTGGGATTAAAGACATGCGCCACCGCACAGCCCATCTTCCATTTTATAGGAAGGC
TGCTGCATAATTTTGAATCTTTATGCTGGGCTGCAAACTCAAAGGCATAGGGGGTAAGA
TAGGCAACAGAAATTGTGTATCGAGTGCTTACTGTATGCGTGGCACTGTTCTAAGTGCTT
TACATATAACACATTTAGTTTTTCAACCATCCTATGAGGCGATTTTATTTCCATTTTAT
AGACAAGAAAACCTGAAATACAGAGAGGTTAAATAG

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 260>:

GNMCJ73F gnm_260

30 CCCTCTACTAAATACAATTATTAGCCAGGCATGGTGGCTTGTGCCTGTAGTCCCAGCTA
CTCAGGTGGCTGAGACACAAGAATCACTTGAACCGGGAGGCAGAGTTTGAGTGAACAA
CAGATCGCGCTGCTGCCCTCCAGCCTGTACGACAGAGCAAGACTCTGTCTTAAAGAAAA
AGAAAAAAGAAAGAAAGCTAAACAGGCCACAAAGGGACCTTTTCCTTTTATTTA
TTTATTTGAGACAGAGTCTCGCTCTATCACCAGGCTGGAGTGTAGTGACGCAATCTCGGC
TCATGGCAGCCTCCGCCTCCCGGTTCAAGCAATTCTCCTGCCTCAGCCTCCCGAGTAGC
TGGAATAACAGGTGATGCCACCTGTAGAGATGGGGTTTACCATGTGGGCCAGGCTGGT
35 CTCGATCTCTTGACCTCGTGATCCGCCCTCCCAAAGTGCTGGGATTATAGGCATGAGCCAC
TGCACCCAGCCTATTTTATTTATTTTGTAGACAAGGTATCAGCTCTGACGCCTAGGCTA
GAGTGCCTGGCGCAATCTTGGCTTACTGCAACCTCCACCTCCCGGGTTCAAGCCATTCT
CCTGCCTCAGCCTCCTGAGTAGCTGGAATAACAGGCACATGACACCACGCCTGGCTAAAG
TTTGCATTTTGTAGTAGAGACAGGGTTTACCATGT

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 261>:

gnm_261

TGAAATAATGATGTGTTTGTATTTTATAATCTATGTTGTGTCCTAGTTTTCAGTGGAAT

ATAAATAATGATGGTAACTTAGATTCAATGTGAACCTTGAGTAGGGGTACAAGTTCAAAA
TCTGTATAAAAAATCTATATTAAATGAGAGAAGAGGCTGGGCGTGGTGCTnCACGCCT
GTAATCCCAGCACTTTGGGAGGCCAAGGCAGGAGGATTGCCGGAGGTCAGGAGTTTGAGA
5 CCAGCCTGACCGACATGGTGAACCACATCTCTACTAAAAATACAAAGATTAAACCGAGCG
TGGTGGCGGGCACCTGTAATCCCAGCTACTCAGGAGGTTGAGGCAGGAGAATCGCTTCAA
CCGGGGAGGCAGAGATTGCAGTGAGCTGAGATTGCACCACTGCACTCCGGCCTGGGTGAC
AGAGGCrrCTCCGTCTCGAAAAAAGAGAGAGACAGAAAGAGAATTTTATTAG
GAAATCTAGGCAATAAAACACAGAAATTTAACTCTGAGCGTCTGGCTACCAAAGCAGGT
10 AGGTGAGGATTTATTTATTTGATGGATGTTGCTTAAAGCCTCCTTGTGTCTAGAGCAGT
CAAATTCATAGAGACAGAAATTAGAATGGTGGTACAGTTTCGATTTTGAAGGTTCAAAA
TATTCTGGATATGGCTGGTAGTGACGGTTGCAGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 262>:

GNMCJ77R gnm_262

15 CCATTACACTCCAGCCTGAGGTGACACAGCGAGACCCTGTCTCAAGACGAAAAAAGTTCT
ACTTGCAACACTCCACACAAGTGTCAATTCTTGGTATGTCAAAATACCAAGAATGAGA
ACTGCTGATACAAAATACAGTGGACACAAAGAAATGTCCCTTTGTATCTGGGAAAGGA
GGCAGGGGTGAGGAAAAGCTTTAAGAGAAAGTGATGCTTCAGCTGTCTTTAAACAGTAA
20 CACAGTTGAGTCTTTTCTGGAAGTTCTGCTTCTTACAGAAGGAAAGTATGTATTAGAA
AACTGAAAAATGTTTCTGATATGGCTGGCATGTATAGTGACCAAGCCAACAGATAATAAATC
TGGGGAACAAAGAGCACCATAAGACCATGGAGGGCCTTGTAACAGATCTGTAACATA
GAGAGATCTGGAAGTGTGGGAAATAGACTCAATGAAGGAACAACCATGTGCTTAGAGAGA
ACCAGGGAAGCTCCATGAAAGATGGAGCCCAGCCAAGAGTGGACATGATAAGTTTGGAG
25 CATCTATGATGATTCTGGGTAATGCATCTAACAGACAGTTAAGAACCAAGTCTAGGCCG
GGTGCAGTGGCTCAGCTCTATAATCCCAGCAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 263>:

GNMCJ77F gnm_263

30 CCGAACAGTCTCTGACTCAAAGTAAGGGCAGTAATTGTCATCTGTTGTTTTGTTCCAGC
TGACTGTGCTGTATCATTTCTCACTCACATTTAAGTCCACTGTTCTTACTGCTAGTAA
TTACCCTGACAGATTACCCATGTTTTTTTTTACATGCTGATTTTCACTGGACTTTTTTTG
AGACAAAGTCTCCTTCTTGTCAACCAGGCTGGAGTGAGTGGTGTGATATGGGCTCCCTG
CAACCTTTGCCTCCTGGGTTCAAGCAATTCTCCTGCCTCAGCCTCCCAAATAGCTGAGAT
35 TACAGGCACCCGCCACCATGCCTGGTTAATTTTTTATTTTATAGTAGAAACGGGGTTTCA
CCATGTTGGCCAGGCTGGTCTTGAACCTCCTGACCTCAGGTGACCTGCCTGCCTCGGCCTC
CCAAAGTGCTGGGATTACAAGTGTGAGCCACTGAGCCAGCCTCAGTGGACTTACTTTTT
TAAGCCTTGTATCCTTGTATCAGCCGACACTGTTGGCCACCCACTTCTAAAACCTTCAG
TGTTTCTGATCCTCCTGTCTTCTGATCCTTTAATCTCTCTTTTTnTTTTTTTTTTTTT
40 TTTTGCTCTGTGCGCCAGGCTGGAGTGCAATGACGCAATCTTGGCTCACTGCAAGCTCCA
CCTCCCGAGTTCAAGTGATTCTCTACCTCAGCCTCCCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 264>:

GNMCJ86F gnm_264

45 CCTTGCTTTTAGGAAGAAATAATAGATGGAAGCTATCTGAATGGTAATGTGCCCCCTTG
ATCTCCACTTGCTTCTTAAGAATTTCAAACAGAATGTAGCTGTGATCTCTGGAATG
ATTCCTTTTAAAGATGTCTTTTCATTTTACTCCCATGTAGCACTGCTGGATCTCATACA

5 GTTTCAAAGGTAAAATGCCCTAGAGGAGAGGGGAAGGGATGGTATAGATTTTAAATAAAA
ATTCTTAATGGAAGTCTCTTAATTGTAAAAAGTAATATGTGCTCATTACAAAAATGTCA
ATCAATGCACAATGTGTTAAAAGTCAACAAACACCCTTGCTCCACGGGCATCATTCCCTCC
TCACTCTAGCATAAGGGCCAATTTTTTTCTTTTTTTGAATGGAGTTTCGCTCTTGTTGC
10 CCAGGATGGAGTGCAGTGGTGCTATCTTGGCTCACTACTGCAACCTCTGCCTCCGGGGTT
CAAGCAATTTTCCCTGCCTCAGCCTCTGAGTAGCTGGGGTAACAGGTACCTGTCACCATG
CCCGGCTAATTTTGTATTTTGTAGAGATGGGTTTTCACCATGTTGGCCAGGCTGGTC
TCAAACCTCCTGACCTCAGGTGATCTGCCGGCCTCAGCCTCCCAAAGTGCTGGGATTACAG
GTGTGAGCCACCGCAACCGGCCTAAGAGCTGAA

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 265>:

GNMCJ88R gnm_265

15 GTACCCTGTCTAAATTTGCCGTCCGTTGAGGTAGAAGGCAAATTTGGAGTTTCTTGTTT
AGAAAAAAACTACAGATGACTACTGTGCACCTGAAAACAGCACTCAGCTTCACTAACGA
GACATGCAAGCTAGAATCAAATTGCTGTTTTGTTTTGTTGCCTGTCGTGATTGTTAGCTG
AAACCAATCACAAGGTCTTTTCTCCCTCTGTATTAGCTCAGCATACTGAGCTTACA
AAGCTATGAACCTTCACGTTGTCGTGGAATCTTACAGCCTGCTACTTCTAAGTATCCTTT
AGAGAAGCTGCCTTGGTGACCAATGAATGTGGTTAGCCTAGTGATACTCTTCTGGGCCAT
20 ATACTGTGTGACTATCTGCATGGACCTTTATTGAAAGCATTTCTGCAAATAATTTTTTA
AGTGTTTTTTAAATGTGTGATAATTTGTGCTTTTAAAGATATCTTACACTTTTCACTTAT
TTGTACCTTTAAAAATCTTTTTTTTTTTTAAACCAAAGGTTTGAGTATCCTCAGAGTCT
GAAATTTGAGCGGATAGTGATGAGCCAGCCAAATCCCCTGAAGATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 266>:

25 **GNMCJ88F gnm_266**

30 CCAAGTTCGAGACCAGTCTGGCTAACGTGGTGAAACCCATCCCTACTAAAAATACAAAT
AGCCAGGTGTGGTGGCGCATGCTGCTAATCTCAGCTCCTTGGGAGGCTGAGGCAGGAGAA
TCACTTGAACCCGGGAGGTGGAGGTTGCAGTGAGCCAAGATCGCACCCTACACCCAGC
CTAGGAAAAAGAGTGAAATTTCACTCAAAAAATAAAATAAAATAAATATGACAGTAAT
CTCTGTTTTATTAAACACATAATGTGCCAGGTACTATTGTGGTCACCTGCAAAGACATGG
AGGGTAGGAAAAGGTTTATTGCTCATATAATGAAGCTTTCTGAGAGAGCAGGGCAGATT
CCAAGCAGGTCCAAAAATGGTTTCAGAAAACCAGGCAAGGAACTCCCTTAGCATTTATG
35 GTGGTTAGGGATGGGGATGGGGATGGGGATGCGATGGGGATGGGGATGAAATGTGGGTCT
GGTGGGAGGGCTAGGGCTTGTGGGTATGAATTTCCAGCTGGTGCCAGGAGAGAGAGCAG
CAGGCTTTCTTAGCTTGCCCAGATGTGGGGCAGAGGGGAGAGAGGGGTGGAAGATGTT
AGCAGTCCCATATCAGAAGTGGAGGCAGACTGTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 267>:

40 **GNMCJ90F gnm_267**

45 CCGAATGAAGTAATCTCTTCATTGTATTTTTTTTTTTTTTACTTATGCTGAGATTTAA
TGACAAAGATTCAATAATCCAAGAGAGAAGTATTATTAGAGGGATTCTTTACCATGT
GATATATAATAAATGCATCCAATGTTATACATCAATTTAAAAAACAAGTAAATAACTTTA
AAGAAAAGATAACTACTGGCCAGGTGCAGTGGCTCACACCTGTATTCCAGCACTTTGGG
AGGCCAAGGCAGGTGGATCATGAGGTGAGGAGTTGGAGACCAGCCTGGCCAAGATGGTGA
AACCTGTTTCTACTAAAAATACAAAAATAGCCGAGCGTGGTGGCAGGCGCCTGTAATCC

-686-

5 CAGTTACTCAGTAGCTGAGGCAGGAGAATCGCTTGAACCCGGGAGGCGGAGGTTGCAGTG
 AGTTGAGATCATGCCACTGCAATCTAGCCTGGGTGACAGAGCAAACTTTGTCTCAAAAC
 AAAAGAAAAGAAAAGATAAGATAATTACTTTATACTTAGCTTGTCTTACCCATGAGTGA
 CGGGCTGCATGTGGCCAGGACAGTTTGAATGCAGTTCACACAAATTTGTAACTTTC
 TTAACATTAGGAGATTTTGGCCAGGTACAGTGGCTCATGCGTGTAATCCAGCACTTT
 GGGAGGCTGAGGCGGCAGATTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 268>:

GNMCJ91F gnm_268

10 CCnTGTCGCCAGACTGGAGTGGAGTAGCATGACCATAACTCACTGCATTGCGGAATCC
 CATGCTCATGTGATCCTCCTGTCTCAGCCTCCTGAGTAGCTGGGACCACAGACATGCATC
 ACCATGCCTGGCTAATTTTTTAACCTTTTGTAGAGACAGGATCTTGCTTGCTATGTTGCC
 CAGGCTGGTCTCGAATCCTGGCGTCAAGCGATCCTCCTGCCTCAGCCTGTCCAAATTCT
 TAACACTATACTATTCTGCCTCCTATACTAATCCACAGAAATAAATTTCTTTTATCAA
 15 TTAACCTTAAACAGACCATTCACTCTCAAGACAGATAGTCAGAAATACAGGATCGAT
 CTGTGTTTCATGTAATACCTGGCTCCTTCCAAGTTCCTTATCCTTCAGGACTGTAGAGT
 TGAATCCAGGTTGCCTCCTTAAATCAAAGAGAGACACTTCCTTAAAGAAAGCCCTTGTA
 TCTCCACGATGCCTGGGGCAGTGTCTCCGCTTGGACCATCTGCCAGAAGCGAGAAGCAA
 CAAAACAACATTGTAAAAATGCATTGAGCTTTGAGGAAGGGCCAGGCACTACATCACAG
 20 GCAATAAAATCCATCAGAACCCTCAGCAACCCTAGGAAGTGGAGAGTAGCATCATCCCC
 ATTTACAGGTGAGGGAACAGAGACTTAAAGTGTGATGAGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 269>:

gnm_269

25 GTACCCCATGGGTACAGAGGAAAAGCAAAGAAAGGAAGGATAAGGATGGGTGCGTAGGAA
 GACAACCTTCCAATTACAAGGCAGAGTAGCTCTGACCTCTAGGAACAGGTGAGCCCCTa
 aGAAAGTCCCAAGGGATGGAAGCAGGTTCTCCTAACCATCTCAAAGGCACCCCTCTTAG
 GGTGATTGGCCAAATAGGACATGTTACCAACACGCTCTCAAGAGAAAGACAGTCTGGTGG
 ACTTCAGTATTCCTGATGCATCCAGTCAAGTCCATGGGTGAATAATTTGTTCTTGGG
 30 GAAGGGTTTCAACAGCATCCTTGTCAAAGATATCTTCATGGGCCACTGAAAGAACTGG
 CCTCCTAGATAGGTCTATTACCTTTAAAGGGTTTTCTTCAGCTTTAACAGATACAATA
 GATTTGGAATGCAATGAAAAAATGACAAACCTACAAAAGAATCAAAACAGTATACAA
 CACTGTCTCTATCCACAAAACAAATGGATCTTTAAGTGCAACCACACAAAAGAGATGAC
 AAAAGCCTTACATACAGGTTTTATATATAAmAmAGGAGACACTTTATTCTAAAATCACC
 35 ACTTAGAAATATAAACATCTTGACAGAGTAGGAATTTTATTCACTTTAAAAACATGCCA
 AAAACATATGGGAGATATTTCTGACTTGAGACAATGCTATACTCTTTTTAAGCATGATA
 TTAAAGTACTCGGCAAATTAGGCTACTTACATAAGAGAAATAAATTTAGCTCTTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 270>:

GNMCJ95F gnm_270

40 CCTGCACTCCAGCCTGGGCAACAAGGGAGAACTGTCTCAAAATAAATAAATAAATAAAT
 AAAATAATGTAGATCTTGAAAGGGGTTGGTTTTATGCTGGTGTATGTACTTTCCAAAGTT
 AGTAACTTACACTTAAGGTTATATATTTTGGCCAGGCGCGGTGGCTCACGCCTGTAATC
 CCAGCACTGGGAGGCTGAGGCAGGCAGATCACGAGGTCAAGAGATGGAGACTATCCTGGC
 45 GAACATGGTGAACCCCATCTCTACTAAAAACACAAAATTAGCCAGGCGTGGTGGTCTA
 CTAAAAATACAAAATTAGCCAGGCGTTGTAATCTGAGCTACTCAGGAGGCTGAGGCAGG

-687-

ACAATTGCTTGAACCCAGAGCGGAGGTTGCAGTGAGCCGAGATCTTGCCACTGCACTC
CAGCCTGGGCGACAGAGTGAGACTCTGTCTAAAAAAAAAAAAAAAAAAAAAGTCATC
AAACCAGATGACACAAATCCAATGGCATTTCACCTTGGTTGG

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 271>:

GNMCJ96R gnm_271

10 CTGCATGACTCCGCCAAAATCTATCGCTTCCCGGTTTCGCAGAGCATTGATGAGCTGATG
GAAGCTTGTCGTGACGTGATCCGCAAAAACAATCTCACCAGCGCCTATATCCGTCCGCTG
ATCTTCGTGCGGTGATGTTGGCATGGGAGTAAACCCGCCAGCGGGATACTCAACCGACGTG
ATTATCGCTGCTTTCCCGTGGGAGCGTATCTGGGCGCAGAAGCGCTGGAGCAGGGGATC
GATGCGATGGTTTCTCCTGGAACCGCGCAGACCTAAACACCATCCCAGCGCGGCAAAA
GCGGTTGGTAACCTCTCTTCCCTGCTGGTGGGTAGCGAACGCGCCGCCACGGTTATC
15 AGGAAGGTATCGCGCTGGATGTGAACGGTTATATCTCTGAAGGCGCAGGCGAAAACTGT
TTGAAGTGAAAGATGGTGTGCTGTTTACCCCCACCGTTCACCTCCTCCGCGCTGCCGGGTA
TTACCCGTGATGCCATCATCAAATGGCGAAAGAGCTGGGAATTGAAGTACGTGAGCAGG
TGCTGTCGCGCAATCCCTGTACCTGGCGGATGAAGTGTATGTCCGGTAAGCGGC

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 272>:

GNMCJ96F gnm_272

20 GTTGCCAGGCTGGCATAAGCACGCGAGGCAAAGGAGACCTGACGTTACGATTTTTTCGGCG
TCCAGGCTTTGTACCTCGAGCGTCTGCGCTTCACGACGCGCCGAGTTCGGCATCGC
TTACCTGTAAGTGAATGCCACGGTTCGGGATGTCGATAGCGATCAGGTACCATCTTCAA
TCAGGCCAATGCTCCGCGCGTTCGCGCTTCGGGTGAGACGTGGCCGATGGAAGACCAG
AGGTGCCACCAGAGAAACGACCGTTCGGTGATCAGCGCACAGGCTTTGCCGAGACCCATTG
25 ATTTACAGGAAGCTGGTTGGGTAGAGCATTTCTGCATCCCCGACCGCCTTTCCGGGCCTT
CATAGCGAATTACTACCACATCTCCGGCGGACAACTTTACCGCCGAGAATCGCTTCTACCG
CATCGTCTGGCTTTTCGTACACTTTCCCGGGCGGTGAATTTGAGGATGCTGTCATCGA
CGCTGCCGTTTTTCAGCATGCAGCCGTTTTCCGCAAAGTTACCGTAGAGCACCGCCAAGC
CGCCGTCTTTGCTGTAGGCGTGTTCAGCGAGCGGATACAGCCATTGGCGCGATCGTCGT
30 CCAGCGTATCCCAACG

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 273>:

gnm_273

35 GGGGGATGAAAACCAGCTCCCGTCCGTCCGAATAGGGGCGGTGCTGTCCGTTTTGTACAA
AAAAACCGTTTTGGACGGAGAAACGCACCAAAGGCTGGCCGGCTTCTTCCGGAACACAG
TTTCAGCGTCACGCAATCCACCCGTGTTGGCGCAAAACACCGCCCATCTGTCGTTTCAGC
CACCGCTTCGGCGACAACAGCGGCATCGGCTGCCTTGCCCGTGCCGCGGTATCGGGCGAT
GAAGGGGCGTGGGCATTGTTTGACCGGTTTCCGGACGAATGGAACATTCCGAATGCAGT
CCGAACGCTCGAGTCGAAGGTTGTACCGGGCACACAAAGCCTATTGGCAGGCGGTAAAA
40 GACGGCAATATCGAAGCCGCATACGCGGGCATTCGGATATCGTGGTTCTGCGAGCTTGG
CGGCAGGATGCGGAAGACTTCAACGAAGCCTATTGCGCCATGTACCGCGCAAAATGAAC
ATACCGGAACATTTGGCATATTTTGGCGGAGAGCCGATTATGATCAGGCAGAACGACTAC
GCGCTTGAAGTGTCAACGGCGACATCGGACTGATTATGGAAGATGTCGGACGGCAGGGC
AGCCTTGCCGCTATTTTGGCGATGCGGACGGATTTAAAAAGGTAGCGGTAAGCTGCCTG
45 CCCGAATTTGAACCCGATTCGCCATGACCGTCCACAAAAGCCAAGGTTCCGAATACCGG
GAAGTATGGCTGCTGCCGCTTCCGCCGCACCTTCGGACGAAGGGGACGATGCATTGTCC

GGATTGAGTAAGGAGCTGTTATATACCGCCATTACCCGCGGAGAGAGAAGTTCGTATTC
TTCGGCGGGGAAGAAGCCTTCCGGCAAGCTGCCGCCACCGTCAAAACGCGTCAGACGGCA
TTGGGCAGTATGCTCGAGCGGGTATTTTACAAGAATAATCCGCCCGAATGCCGCGCCGC
CGCCCTTATGCCTTTTTCAAACGGTATAGGAAAGTGGTTTCCCGGGTTCGCGCAAAAGC
5 AAGCGGATCGCTCGGATTGCGGGCTTTTTGTGCTTCGGCTTGGTTTTTCATCATATCGGC
AACACGCAAAACCCGCTGAGCAATGCCTTATCCAGAAAATCGGATGGACGCAGGTGCAG
ATGTTTCGGCAAGATCGGAAATGATCAGGCGGATTCTCCGTCCGGATTAGATGTTTCGG
CGCATCCCGCAAAAACGCAGCCAGCATCGCAGATTCCGGGGTCGTATAACGCGGATTTCGAC
GGCGGAAGTCGGCTTGGCGGGAAGCCAGGGCGGATTGCAGACAATCAGATCGGCAAAACCC
10 TTCGGGAAACAGATCGGTTTTCCCGTATCTCAACCTGTTTTTCAAAGCCCAAACGGGCAAT
ATTGGCAGGGGCGCAGGCGACGGCTTTCGGATTGGTATCCGTGCCGATGACGGAAGGAAT
GCCCTGTTTTCCGCAAAATGGCGGCAAGCACGCCGGAGCCTGTCCCGATATCGAATGCCGT
CTGAAAACCCGTTGACGGCGCATGGGCGAGCAGGTTCGAGGTATTCGCCGCGCAACGGCGA
GAATACGCCGAAAGGAACGTGTATGCTGCCGCCAGCTGCCGAACGGCAACCCCTTTCTT
15 ATGCCACTCGTCCGACCCATAAACCCAGCAGCAGATTGAGCGGCAGGAAAAACGGTTT
GCCGTCCGCCCTCTCCGTACACGTGAGCAAGCGGAGCGTATATCGGGCGCGCGTTTGT
GTCCAACACAAAACCGGGGCGGATTCAACGGCAAGCATATTCAGAATACGGCTCTGCTG
CGCCTGCTTCATACGGTGGGCATGAAAAGGGCGGCGATATCCGCATCGGAACGGACGGC
GCGAGGTTTCGGAACCCCTCTTCTTCATTGCAGAAAGCACCTGTTGGCATTGTGGAATC
20 GCCCTGCTAGACAGTTGCAATATTTTGATAGGCAGCCTTCAAATGCCGTCTGCACCGCT
TTCGGCGACATAATGCCAACCTTTGGGCGGCTTTTGACAGCTTCGTGCGCCATTTCGAA
CCCGTCATCGGGAAAAATAAAGAAGACATGGGATACCTGCGTCATGTTTTGAAAATAGG
GCGGCAGAACCGCAACCATACGGATGGTACAGCAAGGAGCGGCAACACAGAACAGTTTT
TTGTTCCCGCCTTGTCTTTCCAAGCCCATGCCGTCTGAAGCCGGAATGTTTCAGACGGCA
25 TCGCATCAAATCCATAAATAAACACATATGCTTGAATAATACCTTCAACCCCAATGT
ACGCGAAAAATCGGCAATCTGTTCAGACACAAGAGAGTACCTATGACACAAAAAGAAAAGCA
TTTTGAGGAATATGCCGCTTGGCAACCTTCTTTGCGGGATGTCGTGTTTACCCGCA
TATGGTTCTGCCGCTGTTTGTGCGCAGACCGAAATCCATCGCCGCACTGGAAAACGCCAT
TACCCGCGAGGAGCCGGTTTTCTGTGTTGGCGCAAACCGATGCGGCGGTAGAAGAACCGAT
30 TGCCGCGGACCTGTATCAGACCGGTACGGTCGCACAAGTCCTGCAAGTGTGAAACTACC
CGACGGCACGGTAAAAGTATTGGTCAAGGGCTGTATCGCGGACGTGTTCTGACCATTGA
AGACACGGGCGGTCTGTTCTGTTTCCCATATAGAGACGGTCGTGGAAGAAGACACGGGCGG
CAATACCGCACTCGAAGCCGTGCGCCGACCCCTGTTGGCGCAGTTTGAACAATACGCCAA
ACTCAATAAAAAAATCCCGCCGAAATTATCGGCAGCATCAACGGCATTGCCGAAAACAG
35 CCGGCTAACCGATACGGTCGCAGCGCATTTGCAGTTGAACTGGCGCAACGCCAACAGAT
TTTGGAATTTCCCGAATCGGCAACGGATGGAATTCCTGCTGGCACAGCTGGAATCCGA
ACTCGACATTATGCAGGCCGAAAAACGCATACGCGGACGCGTCAAACGCCAAATGAAAA
ATCCCAGCGCAATATTATCTGAACGAACAGATTAAAGCGATACACAAAGAACTGGGCGA
AGAAGACGAAAACGGCGAACTGGATGCCTTGAAGCAGATATCAAAAAGCGGGTATGAC
40 CAAAGAAGCGGAAGAAAAATGCCTGTCCGAACTGAAAAAGCTCAAAATGATGCCACCGAT
GTCTGCGGAATCCACCGTCTGTACGCAACTACATCGACACTTTGCTCGAGCTGCCGTGGAA
GAAAAATCCCGCTCAGCAAGACATCGCCAAAGCCGGACTGGTGTGGATGCCGACCA
CTACGGCTTGAAAAAGTCAAAGAACGGATTTTGAATACCTCGCCGTCCAAAAACGTAT
GGACAAACTCAAAGGCCCGATTCTGTGCTGGTCCGCCCTCCGGGCGTGGGCAAAACCTC
45 TTTGGGCGAATCCATCGCCAAAGCAACGGGGCGGAAATATGTCGCATGGCTTTGGGCGG
CGTCCGCGACGAAAGCGAAATCAGGGGACACCGCCGACCTATATCGGCTCTATGCCCGG
TAAGATTTTGCAGAAATATGGCAAAAGCCGGCTGAAAAACCCCTGTTCTGCTCGACGA
AATCGACAAATTTGGGTAACGACTTCCGAGGCGATCCCGCCAGCGCTTGCTCGAAGTGCT
CGATCCCGAACAAAACAAGTTTGGCGATCATTATGCGGAAGTGGATTACGATTTGAG
50 TGATGTGATGTTTATCGCCACATCCAATAGTCTGAATATTCGACTCCGTTGCTCGACCG
TATGGAATCATCCGTCTGTCCGGCTATACCGAAGACGAAAAATCAATATCGCGATGCA
GTACCTCGTACCGAAGCAATGAAGCGCAACGGTGTAAAAGAAGGGGAATTGGCAATCGA
AGAAAGCGCGGTGCGCGATATTATCCGTTATTACACCGAGAGCGGGCGTGCCTTCGCT
CGACCGCGAATTGCCAAATCTGCCGCAAGGTGGTGATGCAGATTACCTTGGACGAAGA
55 TAAGAAGAGGTTGTCTGAAACCAAGAAAAACAGCAAAAGCCTTAAAGCGGTTAAAGT
AAATGAGAAAAATCTGCACGACTATTTGGGTGTGCGCCGCTTCGATTACGGCGTTGCCGA
AAGCGAAAACCGTATCGGGCAGGTTACCGGTTTGGCGTGGACGGAAGTCGGCGGCGAATT

5 GCTGACCGTCTGAAGCCGCGAGCATTGCCGGGTAAGGGCGTGATTCACTGACCGGCCAGTT
GGGCGATGTGATGAAGGAATCCGTGTCCGCGAGCGTGGTTCGGTTCGGCTCCCGTCCGGA
ATCAGTGGGTTTGGCTCCTGATTTTACGAGAAAAAGACATCCACATCCACGTTCGGA
AGGCGCGAGCCGAAAGACGGCCCTAGTGCGGGTATTGCGATGACCTTGGCGGCGGTATC
10 TGCCTTTACCAAAATCCCGGTACGCGCCGATGTGGCGATGACGGGCGAAATTACCCTGCG
CGGCGAAGTTTGGCCATCGGCGGTTTGAAGGAAAACTGTTGGCCGCCTTGC GCGGCGG
CATCAAACACGTCTGATTCCGAAAGACAACTCAAAGACTTGAAGAAATCCCTGAAAA
CGTGAAAACCGGCTGACCATCCATCCGGTCAAATGGATAGACGAGGTATTGGCTCTGGG
15 TTTGGAAGCCAGCCTGAGCCTTGGGCGAACCTTCTGGTGGGAAGCGGCGGCGGAATC
CGCTTCAAACCAAAACCCGCGAGCGGCAACCAACATTGAAACGCGAGGAATGTGTT
GTAAATGCGGTTTCGTCTGAAAGCCTGTCAAATAGGGTATTCCGTATTTTGTCTT
GACACGGCAATTCAGAATTGCTATAAGCGAAAGTTGCTCAAGCAGTACAACCCGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 274>:

15 gnm_274

AAAATCCCGTCATTCCCGCGCAGCGGAATCTAGACATTCAATGCTAAGGCAATTTATCG
GGAATGACTGAACTCAAAAACTGGATTCCCACTTTCGTGGGAATGACGGAATGTAGGT
TCGTGGGAATGACGGGATGCAGGTTTCCGTATGGATGGATTTCGTATTCCCGCGCAGGCG
20 GGAATCTAGACATTCAATGCTAAGACAATTTATCGGGAATGACTGAACTCAAAAACTG
GATTCCCACTTTCGTGGGAATGACGAGTGGAAATTACCCGAACTTAAACAAGCGAAAC
CGAACGAACTAGATTCCCACTTTCGTGGGAATGACGyGGWGCAGGyTTCyGTATGGATGG
ATTCGTATTCCCGCGCAGCGAAATCTAGACATTCAATGCTAAGGCAATTTATCGGAAAT
GACTGAACTCAAAAACTGGATTCCCACTTTCGTGGGAATGACGCGATTAGAGTTTCAA
AATTTATTCTAATAGCTGAACTCAACGCACTGGATTCCCGCCTGCTCGGAATGACGAG
25 TAGAAGTTACCCGAACTTAAACAAGCGAAACCGAACGAACTGGATTCCCGCTTTCATG
GGAATGACGGGATGCAGGTTTCGTAGGAATTACGTGGTGCAGGTTTCCGTACGGATGGATT
CGTCATTCCCGCTCAGGCGGGAATCTAGACATTCAATGCTAAGGCAATTTATCGGAAATG
ACTGAACTCAAAAACTGGATTCCCACTTTCGTAGGAATGACGGC

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 275>:

GNMCK14F gnm_275

35 CCAAAGAAGTGACGGAGTTGATGTGCACAGGACTATGTAACCGGGCTTGCCGTTTAACC
CATACAAAGAAGAAAGCCAAGGGCAGGAAGTTAGCAAGCGCGCACACATTCCGACAG
GGCGCAAGTTGCCACATTGGGCGGAAACCGTAGCAGAACCTAATGTACGATAATTGGGA
AGAACCGGGGAAACCGTTTGAAGGAATCGGACGGGGCGTGGTTCGGATCGGCAAACTGAA
GAAAACGGCAAGAGAGAAAAAGACCCGTAAACCGTTTGAATATAGACGGTTTACGGGTC
TTTGTTCGCGCAAAGCAAGGGCTAAGGCAGTCAGGCAGCAAATCCGCAATGTATTAAA
ACAGACGCGTAGAAATGCCGGCTGCCGTGGAGCGTTTTCTTTATTGAATATCATCCTAGC
CGTATCAAGGCTGTATGAATATGTTTTTACCAATGAATATAATCGGGCTGGACATCTCA
40 AAGGACACCATAGACGCAACATTGCATAAAACAAACGGAAGTATCCATTACATTAAATTT
AAGAAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 276>:

gnm_276

45 TTTACCTGCTCTTTTAATTGCAGCTTCATCAATTCGATGACACCTTGACGGTGTGCCTGC
TCTGCGGCTTCTGTGGTATCAAACAGGCGCAGGGCGATGCGGCCGTCTTTTCTTTTGT

AGGCCGAGATAGCCGGTGAGCTGTTGTTTGCCGCGTGCGAATTTGATGGATTCGGGCAGG
GTGCCGATGTCCCATGCGGTGACGTTGTCGCGCTCAAATTCCTGGGTGTTGTACGGAAG
GTAACGGCGGCAGCTTGACCGAGTTGTTGTTGCAATTCGTGCAGTTTGGGCCCGCCGCA
AGCTCTTGTCGCGCGTCGTCGATAATGCGGAGGTTGAAATAGCAGTGTTGCGGCAGCCTG
5 AACGCGGCCCATTCGTCTTGTTGATTGCTCGAATATGCGGATGTGCGCTGCGGTTTTG
GCGATGGCTTGGGCGAGTTGGGGCAGGATGGGGGCGTTGCGGTGCGGCATTGCTTTTCGT
TCCACCGTATTCAAATACCGATGAAGGGGCGATGATTGTCAACCACAATCAAGACAAAG
AATCCACCGTTACCATTACAGGCAATAAAGATATTGCTACACCGGCAATAACAACAGCT
TGGATAGCAAAAAAGAAATTGCCTACAACGGTTGGTTTTGGCG

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 277>:

gmm_277

CATTAAAAATAAGTTTTCTTAATTTTTCTTAGTGCTTGTATCTGCTTATTTGTT
GCAATGCCGTCTGAAGCAATGTGCGTTTACAGCGGCATTGGAATTCAGTTGGGCAGGG
15 TATCGGACGGTACGGTTTCCGGCTCTTCTCATCCGTAGGCGGCATTCTATCAAATCGG
GCAAAACAGTTTCGCCAGTTTCGGTCAGCGGCGGCAGTTCTTCAAAGCTGTTCAAACCCA
AATCGCTGAGGAACGTTGCCGTTGTGCGCCACAATGCGGGTTTTCCAATGTGTCCCGAT
GTCCGATGACTTCAATCCACCCCGATCCTGCAAGTCTGCATCAGTTCTGCGACACCGC
CAGCGCCGCTATGCCCTCGATGTGCGCCGCGGTTACGGGCTGCTGGTAGGCGATAATCGC
20 CAGTGTTTCCATCAGCGCGCGGAGTAGCGCGGCGCACGCTGTTCTGACGGCTGCCAG
CCGCTCGAATGCCGTCTGAACAATCTGAAAACGCCAGCCCTCTGCGTATGCACAGTTG
CAACGCCCTATCCTGCCAACGCGTTTTCAACTGCGCCAACATCAATCAGTTTGTCTTG
CGACAACGGCGGCACACACAGTTTCGCCCATAGATTTTTCGGTGAGCGGTTCCGGTTTGGGT
CAGCAGTGCGGCTTCAATCAGCGCGTCGGGAGAAATTTGTCGGTCATACGGGTATCCGT
25 GCTGAAACGGCATGGGTTTGGATATGCCGTCTGAAATCGGTTGGAGTAGAGAGAAGCTGC
CTGAAAAATATTTTTAGACGGCATTTCTTATGCTTCCGAAGCTTCTGCCCTTTACGCTC
TGCTTTTCTGGCTTCGCGTATGGCTTTGAGTTCGGCTTCTTCTGACGGGCTTTTTGAG
CCAAGTTTCCATTGGTTTCGGCGTTTCGAGGGTGATTCTGCCGATTTGCCTTCACGGAA
GTCCGTGAGGATGTTTTCGGCGGCTTTTGGTAGTTGATCCGTCCGCCGCTGAGGACTGC
30 GCCGCGTTTTTGGCTATCCATTGAGCCAAACGTTTTTCGTCCAGTGGCTGCTGGGGTC
TTTGTGCGCTTGGTAGCGTTCTTGCAACATAGGGAGGTAGTGGCGGCGGAGGTAGTCTAA
AAGTTCGAGGGGACTTCTTCTTCGTCAACGCGTTGCCGTCGACTGCCGCGCCGGCGGC
AAGGTTGTAGCCGCTTCTTCGACGATGATTTTCGGCCATAGCATTCCGGGGGTGTCGTA
GAGCCAGAAGTCATCGGCGAGGAAGAGGCGTTGTTGCGCTTGGTGATGCCGGGTTCGTT
35 GCGGTTTTTGGCGGATTTTTGCCTATCATGCCGTTGATGAGGGTGGACTTGCCAACGTT
GGGGATGCCGAGATGAGGACGCGCAGGGGTTTATCTATGCCTTGGCGGTGGGGAATCAT
GGCAGCAGAGGCTTGGGTAATTTGCCGTGTGCGCCTGTTTCGGAGGAATCGAGGGCGAT
GGCGCAGGTGTGCGGGCGGCTGTTATAGTGTTGAGCCAGATTTTGGTGCGCTCGGGGTC
GGCAAGATCTTGTGTTGAGGATTTAAGTTTGGGTTACCTTTGGAAGCTGGGCAAG
40 CAGGGGTTTTTCGCTGGAGGCGGGCATACGCGCGTCCAGCATTTCATCACCATATCAAC
GCTTTTTGCACGCTCGGCGATGGCTTTTTTCGCTTGTTCATATGGCCGGGAAACATTG
GATTGCCATGTCTGTTCTTTCTTTCAATATTTGAAATGCCGTCTGAAACGGAGGACGGG
GTTTCAGACGGCATAATGGTTTGACGGAATTAGCGGTCTGACAGGTTTTGCGCTGTCTG
TGCGGTATCAGCAATTCATAACGCCCTTTCAACCTTCGGGCGAGTTTTTCGACAATATAG
45 ACCGAACGGTGCTGTCTCCCGTGCAACCGATGGCGACGGTAACGTAGCTCCTGCTTTCA
TCCTCAAACGCGGTAACCAATGCGTAACAAACCTTCGATGTCTCAACCATTTCTGTC
ACAAGCGCTGTCGCTGCAAAATAATCCCAACGGGCTTGTCATACCGGTGTAAGGCTC
AATCGGGATCGTAATACGGGTTGGGAGGCTGCGCATATCGAACATAAAATCCGCGTTG
TTCGGCACACCGTATTTGAACCGAAGGACTCCAAATCACCAGCAGCCCGGTACGTTG
50 ACCTTCAGCCACTGCCGACTGCATGGCGGAGCTGTTGGGCATTCTTGAAGTGTCG
ATACAATAGGCGATTTCTTTAAGCGGGAACAGCCATTCCTGTTCTTTTAAAGCTTTCC
AACAAGGTATATCTGATTGCTCAGAGGATGTCTCGCCTGGTTTTCGGAAAACGGCGG
ACCAACACGCTTCTTCCGCTCGACAAACAAACTTCAACCTGTGCCCCAGTCTGCGC

AGAGAGGCAATCTGTTCCCGCGCCTGTCCGATGTCAATGCCGGAACGCACATCGACGCTG
ACCGCCAATTTCGGTTTCGTCCGCACGTTTCGATATGATACGACACCAGCGCGGCAACATT
TCCAAAGGCCAAATTTGCCACGCAGAAATAACCCGAATCTTCCATTTGGCGCAGTGCGACG
GACTTCCCCGAACCGGACAGGCCGCTAATCAGGACGATCTTCATTGTGTGTTCGTTTTTC
5 TTTAAGTTGCGTCTGATGGCGTTCCAAAAATTCGCGCGTACTGTCTTACCGCGCAACTG
CAAAATGTAATTGCGTACCGCCGCTCAACCAAAACGCGAGGTTGCGTCCGACGGCGAC
GGGCAGCGTAACCGAACGGACGTTGACGTTGAGGATGGATTTCGGTTTCGGTGCGGATGCT
CAACCGGTCAAGCTGCTTCATATACTCGTTCGTCCGCTCGACTAAATTGATAATGAGTTG
CAGGATTTTTTTGGGGCGGATGGAAGTTTCGCCGAAAATATGGCGGATATTGAGTATCCC
10 CAAGCCGCGCACTTCCAAAAATCGCGCAGCATAGGCGAACAACGCCCTTCCAGCGTTTC
CGGGCCGATGCGGAACAGCTCGACCGCATCGTCGGCAATCAGGCTGTGGCCGCGCGAAAT
CAGTTCCAATGCCAATTGCGTCTTACCCAGGCCGGAATGCCCGGTAATCAGCACGCCGAT
TTCAAACACATCGAGAAATACGCCGTGTTGACGGACGATGCCGCCAAGGTGCGTTGCAG
GTAAATCCGCAACACGTCCATCAGATAGGGGCTTTCGAGTTTGGAAGTCAGCAGTGGAAT
15 ATCGTTTTTATGACAATAGTCGCGCAGTCCCGGGGAAACCGGCAAGCCGTTTGCCACAAT
AACCAGACATAGAAATATCGAACAGGTGCGCAACTGATAACCCGTTTCCCCGATTTC
GAGGCGGTTTCAGATATTCGACTCTGCCAAACCGACCACTTGGAATTTGGTTGGGATGAAT
GAAATTCAGGTGTCGACTAGGGCGAGGACGGGCTTGTCGCGCTCTACGCCGATACGGTT
GTCCGCACCCGAATTGCGCGCGGCCCAAGCGAGTTGCAGTTGTATTGGTTGTCATCAAA
20 CAGGCGCGGACGGAGATACTGGGCATATTATTCTTCAGTCAGGATGGCAGGACTTCTT
CCGCAGAGGAAACCGTCATCAGCGATTCTCTGATGCTTTTTTGGGAAAACCTGCCGGCCA
GTTTGGATAAGACTTCCAAATGCTCGCCGTTGCGTTTTCCGGAACAGCAAGATAAAAA
TCAGGGAACCGGCTTGCCGTCCGGTGCGTCAAATCCGACGGGTTGCGCGTGCGGATGA
ACGCGCCCGTTCGCTGCTTCACGCCGGCATGACGGCCGTGCGGGATGGCAACGCCCTGCC
25 CCAAACCGGTTCGAACCGAGTTTTTACGGGCAAAAAGACATTGCAAAACATCAGCATGGG
ACAAATGAGGATTGCGGTTCCAAAAGCAGGCCGTGCTTCTCAAACAGCCTTTTTTACTGC
CTACCTCCATATCCAAAACATATGGGACAAAGGCAAAATTCGCCGATAAGGCTCATAA
GCTTCTCTTTTTCAGACATCGCAAAACAGAAAGATTGTACCGACTGCCGGGGCAAATCTCA
ATCCCGCATACGGTACGGGCTGACATAACACAGCGTTTTTAAAAACATATTTTAAACGCTTT
30 TCGGCACAGATAGAAATGCCGTCCAAAGCAGTTTACGGCTCTTCAGACGGCATTGCCCTG
CCTTATTTTCGCGAAAAACGTATGGGCAAAAATGGCGGTAACACACCCCAACCAATTCTG
TTGTTTGCCAAAAACGTTTCAAACAGATTTCGCCGACGCGGCTTTTGATGGCGGCATAT
TGGCGGTATTGCAGCAGCAGGACGATGGGGATTGCCGTCCAATATGCCCATGCCGCACCG
ATAACCGCACCCAATACTGCCATCAGCAGGGTAAAGCCTCCGTGACACAGCATAACGGCG
35 GCGATGTCGTAACGCCCCGAACGTGACGGCGGAGGTTTTGATGCCGATTTTCAAATCGTCT
TCTTTGTCGCCCATTTGCATAAACCGTGTATACGCCAGAGTCCATAACACATTGGCGGCA
AAGAGTATCCACGCTTGAGGCGGCACGTTTCCGGCAACGGCGGCAACGCCATCGGGATA
CCGAAGGAAAAGGCAAGCCCGAGATAGAGTTGGGGAATCGGAAAAAACGTTTGGTAAAC
GGGTAAGTCAGCGCAAGAAACAGCGCGGGCAGGCTCATCAGCCAAGTCAGATGATTCAGC
40 GGAATCAGGCACAAATGCGGCAAGCAGGCACAAAAATGCCGTGACGAGCAGCGCTTCTTTT
TTCTTGACCTGCCCCTGTGCGAACGGACGTTTTTTGTACGCTCGACAGCACCGTCAAAA
TCGCGGTCCGCAAGTCGTTGATGACGACGCGGCACTGCGCATTAACCAACGTGCCGATT
GTAAACGCCGCCAATACCGCCAAATCGGGAATGCCGTCTGAAGCCAGCCACAATGCCCAG
TAGGTCCGGCCACAGTAAAAGCAGCGTCCCAATGGGCTTGTCGCCCGCATCAGGCGCAGG
45 TACACATCCAAACGGTCGGACAGGCGTAAAAATAAGGGGATTAGGATTCATATTGCCG
CGCAGCTTGAACAAACGGTATTTATCCGATAAAACGTTTCAGTTTCGGGCAGAAATACT
CGGTACAGCAGCATTTCTCGCGGTGACGGGAAACCCGAGAACGCCGCGCGGCAAGTACC
GTCCGCATCTTCGCCGGCAACGGCAAACTCAAACGCCGAACGCCGCCCTTCCAAATCGG
CTTGAAACAGACGCTCGCCCAAGGACGCGTGCCGAGTCCAAAATGTTTGCCAAAACG
50 CCGAACCGATACGGCATTTCGCTCCTTGCTCAACACAGGGATACGGTCCAGCTTCAACA
AAACTTCGCGCACCAGCCTCCCTCCGCATTCCGTCTCCAATTCGCCCAGTTTCAGCAGTT
CCACCGAAAATGTATGCGGCAAGGCGCGCAATGCGGCGGTGAGCGACCGGGTGTGCAGCA
GCCGCACCATCGGCAGGCTGATGCCGTGAAATGGCGCGGGCAAGTCGGGCAGCATT
TCCCAATAGGTGTTCCATATTTTCCCAATCTTTATACCGCGTCTGTTTTGCCAACTC
55 TCCCAATTCCGCTTCGGAAAAATCGGCTTTCAGACGGCATTTCAGTAGCTCAGGCTGTC
TTGGGCGATGTGTGCGTCCGGGCTGTCGTGGATGTGGTTGAACACGAGGCTGTGCAAGCG
AATGCCGTATTGTTGAGCGCGGCAAACTGAGTAAAGTGTTGATACTGCCGAGCCG

TCCGCTGGTAACGAGGATGACGGGATAGCCTTGCTGACGGATATAATCAATGGTTAACAG
GTTTTCCGTCAGCGGAACCATCAATCCGCCCGCGCTTCGACCAAACGACTTCGTA CTG
CGCCGCCAATTCTTGTGTGGCGGTGCGGATTTTGTCCAAGTCCAAAGCCCTGCCATCCAG
TCGGGCGGCGAGGTGAGGCGAAGCGGGATAGCTGAAGATTTGGGCATAGTCAGCCGCCG
5 TTTGTGCGCTTCTGTCATCGGTATGCCATAATTTGCGGTGGACGGCGATGTCGTGCGC
AATGTTTTGGCAACCGGTTTGACGGGCTTTTGCCTAATCACGCTTTTGCCCTGCTGCAA
CAATTGTTTTGCCAACACGCCGGTGGCGACGGTTTTGCCGATGTCCGTGTCTATGCCGCT
GACGAAGTAAACGCCTTTTCAATTTGCTGTGTTCTTCAAGATTTGCACGGTTTTGTGCGCA
AGTTTTGGTCAAACGCCGTCTGAAATGATATAGGGCGGCATCAGATACACCAGCCTGCCG
10 AACGGGCGCACCCAAATGCCCTGCCGCACGCAGTCCGCTTGAAAACGCCCATATCCACG
CCTTTTTCCAGCTCGATCACCCGATGGCACCTAAAACGCGCACGTCTTTCACGCCGCGA
ATGTCACCGCGCTTTTTCAGACGGCTTTTAAAGATGCTTTCAATGCGGCGGATATTTGCC
TGCCAGTCTTGAGACAAAAGCAGTTTGACCGAAGCGCAGGCAACGGCACAGCCAGCGGG
TTTGCCATAAACGTGCGGCCGTGCATAAACACGCCCGCTTCGCCGCGCGAAATCGTTTCG
15 GTAACTTTTTGCAGGTGATTGCTGCCGCCAGCGTCATATAGCCGCCGCTCAAACCCTTG
CCAATACACATAATATCCGGCACGACCTCCGCGTGTTCGAGGCAACATCTTGCCCGTG
CGCCCGAATCCAGTGGCGATTTCTGCAAAAATCAGCATGATATCAAATTCGTGCGACAAA
TCGTGCAATCCGCGAAGATACTGCGGATGATAAAAATACATGCCGCCCGCGCCCTGCACG
ACCGGCTCTAAAATAAAGGCGGCAATATCCGCATGATGCACTTCAAATAAGGCGCGGACA
20 GGCTGCAATCCGCCCGTCCATTTCATCGTCGAAACGGCTTTTCGGATTATCGACAAAA
TAACGCTGCGGCAACGCGCTGCCGAAAATATGGTGCATCCCGTTTCCGGATCGCAGACG
GACATCGCGTTCCAAGTATCGCGGTGATACCCGCGGCGCACCGTCGCGATATTCTGCTTC
GCCGTCAAACCCCGCGCTGCTGGTATTGCACTGCCATCTTCAGCGCAACTTCCACCGAA
ATCGAACCAGTCCGCATAAAAAATACGGTTTCAGCCCTGCGGCAAAATCCCGACCAAC
25 AACTTGCCAGCTCCACCGCTGGCTCGTGCCTCAAACCACCGAACATCACGTGCGCCATT
TGTTTTCATCTGCGTCTCAACCGCTGATTCAAACAGGATGATTGTAGCCGTGTATCGCA
CACCACCAGGAGACATCCCGTCAATCAGCCGCTGCGGTCCGCCAATTCGATAAACACC
CCTTCTGCACGTTTGACAGGATAAACGGGCGAGCGGATCGGTCTAGGAAGTATAGGGATGA
AGCAGATGGGTACGGTCGAAATCAAGCAATGATGATATGTGTTGATGTTTCAGACGGCATA
30 AGTTTCTCTCTTTCTTCTTACTGTATTCAAACGCAAAACGCGTATTCTACTCCGACAGA
CCGTTTTCCACACCTCTCCATCCGTTTCGGGCGCAAAACCGCGAAACAAATCGTCCGCAG
TATAAGCGCACACCGTTTCGCATTCCCAAGCCCGATTGGAATCAGACGGCCCAACGCC
AATACCGTTTCACGCAGCCTCCGCCAACGCTTCAATCAGTCATAGATATAGTGGATTAA
CAAAAATCAGGACAAGGCAACGAAGCCGAGACAGTACAAATAGTACGGCAAGGCGAGGT
35 AACGCCGTACTGGTTTTAAATTTAATCCACTATAAACGGCAATCCATACGATACAGATCA
TAGCAACAGCCATCGCAACAGCGTTAGCAAAATCAGGGGACTCCGACATAGGCGCATAGC
ACCTACCGATGCACGGCTCCTCATTGCGCTCTATGAATACCATACCCATCACAAAATCCA
CCGCCAAAACAGGACAGGCTTCTTATACTTATGATAGATTTCCACCATCCTGTCCCAT
TATACCAACATTTCATACCGTATATCCCGCAGGCAACAAATTCGATTGAAGGTTACAGC
40 CTTATTTTATAGTGGATTAAACAAAATCAGGACAAGGCAACGAAGCCGAGACAGTACAA
ATAGTACGGAACCGATTCACTTGGTGCTTCAGCACCTTAGAGAATCGTTCTCTTTGAGCT
AAGGCGAGGTAACGCCGTACTGGTTTTTGTAAATCTACTATATTTTCAAACCGGAAAAAT
GCCGTCTGAACCTTCAGACGGCATTCCATTTCATATTTATTCGTCTTTTTTGTGTTGATG
GCGTTTCGGGAACGATTGCCGCCGTAAGGCTCTTCAACCGTATATTCTCCCTCGATAATA
45 TCGTCATCGCGGAAAAGCCCTCTTTCTGCCCGATTGGTTCATGTTGAAAAAATTTCC
GCACCTCCTGCCTGCAACACTGCCCCCTCCCTTAAACGGCAGCAGCAATACCGCCAAC
ACCGAGGATACGAATCCCGGACTCATCAGACACACAGCCGCCACCGTATAACGGATAGGC
CACAACATCTGATAAACGGATACCCTCCCGCCGCTTCTCATTGCCGCGCCCGCAATAAA
AGACCGGACAGCCCGTATGCCTGAGCATCAGCAGCCGCGGCAAAACCTGCCGCCATC
50 AAAAAACAACGTCCAGCCGCGCCGAGCCCAATCGGCAACCCACACAATCGACATAATCTCC
AAAAACAGCAGCACCAAAAAACCGATACCGAAAAATCTCATTGACCGTCATCCTTATATT
TAAGTAAACAGCAAAACGCCCGAACAGGACTCCAAGCGAGCTGCCTGTAAATGATTACAA
AACCATGTGCTTCAAGCCGAAACAATGTGAAATCTCGCAATATAGTGGATTAAACAAAAAC
CAGTACAGCGTTGCCTCGCCTTAGCTCAAAGAGATCAATTCTCTAAGGTGCTGAAGCACC
55 AAGTGAATCGGTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 278>:

gnm_278

5 GATGATGATCTTCTATAGAAATAAGCCTGCCAACTGGGTTCGGGCAGCTATCTGATT
CGGGATTTTTCCCGCCACATCACTTCTATCCATGCATCCTGTAACGGCAGCTCCATGCCG
CTCGAACAAATTGCCAAAACCGCTGGCATGCCGCCGCCGTACGCGGCGAGTGGCAAATC
CGCTACACCGTATATGCATTGATTGTCGGTTTCGAGTTCTTTTCTGACGACAGAACGC
GGTTTTTTTACGGATCGTGCCTGTTTTTGAAGTCGAAGGAACGGAAACGCTGCCGCAC
10 CGCTTGAATTGACGGGTATTCCGTCCGAATGGCGTATTGCCACAACGCTGCCGAAACA
GGGAGGTTTGTCTTTACGGCGGCATCTATGCCGAATTGATTGACCGACCTGTGAGATG
GGCTTGATTGAATTTTAGATTTTGGGCGGCAGGCATTCCGCACACAATTGCCTTAAGC
GGCATATATCCCGATTTCGACCGCAACAGGCTGGTTTCGGATATCAAAAAATCTGCGAA
ACAGAACTGGCGGTGTTTTCTCCCTGCCCGTTTTCAAAAATATTTGTTCTGCTCCAC
15 GTCGGCGACCATATTTACGGCGGTTTGAACACACCGACAGCACCGCCCTGCTCGCCGAC
CGCCACAGCCTTCCGCCGTACGGTATGACCGATGCCGACGATACCTACACCACATTGCTC
GGACTTTTCTCCACGAATATTTTACGCGTGGAACGTCAAATCCATCAAACCTGCCGCG
TTCGTCCCTTATGACCTCGACAAAGAAACTATACCGAACAACTATGGGCATTGGAAGGT
ATTACATCCTATTACGACGATTGTTTTTTGGCACGCGAGCCGACCATCTCGCCCGAATCT
20 TATTTAAACCTGCTGGCACAGGCATTACGCGCGTACAACAAACCCGCGCCGTTTGAGG
CAGACCTTGGCGGAATCGAGTTTACCGCGTGGAACAAATTTACAAACCGGATGAAAAC
AGCCCCAACGCCATCGTCAGCTACTACCAGAAAGGCGCGCTTGCCGCAATTGTGCCTTGAT
CTGATAATACGCAACCGAAGCAACGGCAGACATTCTCTGATACGTTAATGGACAACTC
TATCGGGAGTGGAGGGACACACTCGGGTATTCCGGAACAACTGGCAAATCCGCTGT
25 CAGGAAATTACCGGCTTGGATTGGAAGATTTTCCAAAAGCGTTATACAGTACCGAA
GATTTGCCGCTTGCCGAATGCCGCAACCGCAGGCGTGGGACTGACCTTCTGCCGCTT
CCCCGACAACACGGCGCGGATACGCAACACATCTGCCCGTCCCGTGGCAGGCGAT
TTTGGCGCAGTTTCAACAAACACCGACCACATCGTCTGACCCATGTCTTCAACGGC
GGCAGCGCGGAATCTGCGGCACTGTGCCCGCAAGACAAATCATTGCTTTAGACGGTTAT
30 GCCTGCACCGACTTTACCGCACAAATGGGCCGATACCACTCAATGCAAAAATCAATATC
CACTTCTTCCGTGCCGGCATATTGCGTCAAACCGTCTTGACGGTTCAGGCAGCGGAGCG
GATACTGCCATCTACATATCACAGACCGGAACCTTTGGACAACCTGGTTGTTGCGTTAA
ACTTTAGACGGCATTCACACAAAATGCCGTCTGAAAAACAACCGCAAAGTAAAGGAAA
CAAAATGGCCATTCTGAACTTGACGAACACCTCTATATTTCTCCGCAACTGACCAAAGC
CGATGCGGAACAAATCGCGCAACTGGGCATCAAACCGTCATCTGCAACCGCCCCGACCG
35 CGAAGAAGAATCGCAACCGGACTTCGCCCAAATCAAACAGTGGCTGGAACAAGCAGGCGT
TACTGGATTCCATACCAACCGTTACCGCACGCGACATCAAAAACACGATGTCGAAAC
CTTCCGCCAACTCATCGGACAAGCCGAATATCCCGTCTTGCTTATTGCGCGACCGGTAC
GCGCTGCTCCCTCTGTGGGGCTTCCGCCGGCGGCAGAAGGTATGCCGGTTGACGAAAT
CATCCGCCGCGCCCAAGCGCAGGCGTAAATTTGAAAACCTTCAGAGAGCGGCTGGACAA
40 CGCCCGCTCTGATTACAGCCGAAACGTTTAAACACACCTTCAAGCGGCATTCCACCG
CAACTTGAAAAAGAGGACGGCAAACCTTACTGCCGTCTCTGTCTTCTCCGTTTTTACA
GTGGGAGACCTTTGCAAAAATAGTCTGTTAACGAAATTTGACGCATAAAAATGCGCCAAA
AAATTTTCAATTGCCTAAAACCTTCTTAATATTGAGCAAAAAGTAGGAAAAATCAGAAAA
45 GTTTTGCATTTGAAATGAGATTGAGCATAAAATTTAGTAACCTATGTTATTGCAAG
GTCTCAGTGGGTATAGCGGATTAACAAAAACAGTACGGCGTTGCCTCGCCTTAACCTCAA
AGAGAACGATTCTCTAAGGTGCTGAAGCACCAAGTGAATCGGTTCCGTACTATTTGTACT
GTCTACGGCTTCGTTGCTTGTCTGATTTTGTAAATCCACTATAAAAATTAGAAATGC
ACATTTTCATTATTCTCGCGCAGGCGAGGACTCCAGACTTACCCATTTAGTAATGTTTGA
AAATAAAGAAAAATCAGATGTTGTATTCCCGCTGCGCAGAAATGGAGACGGTGCTCT
50 GTCGTCTCATTTTGTTTTAACTATATATAGCTGATTAAACATAAGAAATGCCGTC
TGAAAGACTTTAGACGGCATTCGTTCAAGCGTCGAACCTTTATTGCGCCTTGGTTTCGGT
TACAAAACCGATTTGGTGATTCTGCTGACGGGCGGCTTCTAAAGCTTTGTTTACATA
ATCGTATTCCACCGCCTTGTCTGCCGCAATCGCCACAATCACGTTTTTCATTCTGCTCCTT
GGCGGCTTTCAGACGGCTTCCACTTCCCGATTTCACCTTTGCTTGCAATCCCGGCC

5 GACATAATAGCCGCCGTTTCGCATCAATCGTCAGGCGCAGGGGGTCTTTAGGCTGTTTGTC
 CTGCTTGTGTTGTCTGCTCGGACGCGGTTCGCGAGTTCCAAAGGGATGGAATGCGTCAGCAC
 CGGCATAGTAATCATAAACACAATCAGCAACACCAGCATCAGTCCACCAACGGCGTAAC
 GTTGATGTCGGACATCGGAGAATCGTCGCCGGAATTCATCGAACCAAAATGCCATAATCAG
 10 CTATCCTTTTGATTAAGCAGGCGGACGTGCAAATCGTGCCCATCGCATCCAAATCCTGG
 GTCAGTATTTTGTGCCGCGATTGAGGAAGTTGTATGCCAACACCGCCGGAATCGCCACG
 AACAAACCCCGCCGTCGCCACCAGTGCCTCGCCAATCGGCGCGGCAACCGCCGCAATA
 CTCATCTGCCCGCTTTGCCGATATTGATCAGGGCGTGGTAAATCCCCCAAACCGTGCCG
 AACAGCCCGATAAACGGCGCGGTGCGCCGATGGAGGCAAGCGCGGTATCCCGTAATCA
 15 AACCGGCGCATAATCTGCGCCATACTGTTGCGGATTTGAATGACCAAACTACTCGTTCAAC
 GGCAAAGCCTGCGCCAGTTTCGGACGCTTCGTTTCGGCGGTAGTTGCGGTAAGACTGCAAT
 GCCTCTTGCGCCAGTTTGACAAAGGCGCATCGACGGCGCGCACTTTTTCGACCGCGTCTG
 TTCAGCGCAAAAGTATCGCGCATATGCCGTTTGACGGCGGCATTCCCTTTGCGCGCCCGA
 TACAGCTTGATGCAGCGCAAGACAACCAACACCAGTTACGATACTCATCAACAGCATC
 20 AACACAAACACACCAATCAGGACGGGATCGCCCGATTCAAACACTAATTTCAAATTCATA
 ATGATTCCAACACTGAAAAACCAATCAAACATCCAAGCTGCCGCAAACCGCTGCGGCAA
 CCGCCTAATTCAATCAAACCTTGACGGGGACTTTAAACTCCGTCCAGGCATTGGCTTGAA
 AATGCCCGTTTTGCGCCGCTTTCGCTGCGGCATTGTCCAACCGGGAAAAACCACTGCTTT
 TCACGATTTTAAACGGACTCAACATGACCGCCCGGAGAAACCAAAACGCTCAAAACAACCG
 25 TACCCTGCTCGTCATTCTCCATAGAAAGCGTGGGATAAGCCGGGCGCGGAATGCTGCCGT
 TGGCGCGTAAAGGATTGCCTTTGCTGCTGCGGCTCCTTCCCGTGTTTCGCTTTGACAC
 CGCCGCTACCTTTACCGCTGCCTTCTCCGCGCCCGTTCCGTCTCCTTTGGTACCAGTTC
 CTTATCTTCCCATTGCCCTGCTCGCTGTCTGCTTTGGCAGAAGCATTGCCGGGATGTT
 CGGCAGGTTTTTCAGACGGCTTCTCGACCGGTTTTTCCGCGGTTTTCGGGACAGGCTTCG
 30 CTTCCGGCTTAGGCTCTGGTTTTCGGTTTTCTTCGGGTTTCGGCTTTTCTCAGGTTTTCG
 GCTCTTCTTAGGCTCTGAATATCCGCATCCGCCTTTTTCGTAACACCGGCTTCAAAA
 CCGGCTTGGGCGGCTCGACAGGTTTGGGCGGCTCGGGCACGGGTTCGGGTTGGGGCGCAG
 CAGGCGCGCCTGCACCTTCGGGGGCGCGTCCCCTCCGCCAAATCGCCCAATCGACAA
 ATTAATAACCTTTCAGTCTATCAGGGGAGCTTGTGCGCTGCCAGAGCAATGCCA
 35 CCATTGCCAAATGCAGCAGTGCAGCGGAAACACGACTGCGGGGGTTAAATTCGTTCTT
 TATCCATAATTCGGGCATAATAATAGCAGGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 279>:

gmm_279

35 ACGACCAAGGTACGCGCAATCTGGTGGCGGCAAGTATCGCCATCGATATGGTCAAAGTCC
 TGTCGCCGGAAGCGTGAAAGATTTCCACTTCTATACGCTTAACCGCAGCGAGCTGACTT
 ACGCCATTTGCCATATTTAGGCGTGCGCCCTTAAAGCCGTATCAAACAGTTTCAGACGG
 CATCTAAGGTGTCTAAAAAGCAAAACACCGCCCCATCCGAGCCATTCTGATTTACAATAC
 40 CGGCCGATTTCGGATTGAACCGGTCTTACAAAATCCAACCTGGAGAGTTCAACATGACAAC
 ATTACATTTCTCAGGCTTCCCGCGTGTGCGCGCCTTCCGCGAATTGAAATTCGCACAAGA
 AAAATACTGGCGCAAAGAAATCAGCGAGCAAGAATTGCTGGCTGTTGCTAAAGACTTGCG
 CGAGAAAAACTGGAAACACCAGGTGCTGCTGCCAACGCCGATTTGTTGCCGTAGGCGATTT
 CACTTTTACGACCACATCTCTGACCTGCAAGTCGCCACCGCGCGATTCCCGCCCGCTT
 CGGCTTCGACAGCCAAAACCTGTCTTTGGAACAATTCTTCCAACCTGGCGCGCGGTAACAA
 45 AGACCAATTTCGCTATCGAAATGACCAATGGTTTCGACACCAACTACCACTACTTGGTGCC
 TGAATTCACGCCGATACCGAATTCAAAGCCAATGCCAAACACTATGTTCAACAACCTGCA
 AGAAGCCCCAAGCCCTCGGTCTGAAAGCCAAACCGACCGTTGTAGGTCCGTTGACTTTCTT
 GTGGGTGGGTAAGAAAAAGGCGCGCTCGAATTCGACCGTCTGAGCCTGTTGCCTAAACT
 GTTGCTGTTTACGTTGAAATCCTGACTGCTTTGGTTGAAGCCGTTGCCGAGTGGATTCA
 50 AATCGACGAGCTGCTTTGGCTGTCGATTTGCCATAAGAAATGGGTGGAAGCCTACAAAGA
 CGTTTACGCTACTTTGAGCAAAGTAAGTGCCAAAATCCTGTTGAGCACTTACTTCGGTTC
 GTTGCCGAACACGCCGATTGTTGAAAGCCCTGCCTGTTGACGGTCTGCACATCGACTT
 GGTAACGCGCCCCGAGCAACTGGACGCGTTTCGCCGACTACGACAAAGTCTGTCTGCCGG

CGTGATTGACGGCCGCAACATTTGGCGCGCCAACCTGAACAAAGTTTGGAACTGTGCA
GCCTCTGCAAGCCAACTGGGTGACCGTTTGTGGATTTCAGCTCTTGCTCGCTGCTGCA
CACTCCATTTGACTTGTGAGTTGAAGAAAACTGAAAGCCAAACCCGACCTGTACTC
5 TTGGTTGGCATTACCCCTGCAAAAAACCAAGAATTGCGCGTTCTGAAAGCTGCATTGAA
CGAAGGCCGTGATTCTGTTGCCGAAGAACTCGCCGCCAGCCAAGCTGCTGCCGACTCCCG
TGCCAAACAGCAGCGAAATCCATCGTGACAGCTTGCCAAACGCCTGGCCGATTGCTGCG
CAACGCAGACCAACGCAATCTCCATTTGCCGACCGTATCAAAGCGCAACAAGCATGGTT
GAACCTACCTCTGCTACCGACTACCAACATCGGTTCTTTCCCGCAAACCACCGAAATCCG
10 CCAGGCACGCTCAGCCTTCAAAAAAGCGCAACTGTCTGCCGCCGATTACGAAGCCGCGAT
GAAAAAGAAATCGCCTTGGTGGTTGAAGAGCAAGAAAACTGGACTTGGACGTACTGGT
ACACGGCGAAGCCGAGCGTAACGACATGGTTGAATACTTCGGCGAATTGTTGAGCGGTTT
TGCATTCACTCAATACGGCTGGGTACAAAGCTACGGCTCACGCTGCGTGAAACCACCGAT
TATCTTTGGCGACGTAAGCCGCTCTGAAGCCATGACCGTGGCTTGGTCTACTTACGCACA
AAGCCTGACCAAACGCCCGATGAAAGGTATGTTGACCGGCCCTGTAACCATCTGCAATG
15 GTCTTTGCTCGCAACGACATTCTCGCTCTACCGTGTGCAACAAATCGCACTGGCTCT
GAACGACGAAGTATTGGATCTGGAAGAAAGCCGGCATCAAAGTCATCAAATTGACGAACC
TGCCATCCGCGAAGGCTTGGCGCTGAAACGCGCCGATTGGGATGCCTACCTGAATGGGC
GGGCGAATCCTTCCGCTGTCTCTGCCGTTGCGAAGACAGCACCCAAATCCACACTCA
TATGTGTTACTCCGAGTTCAACGATATCCTGCTGCGATTGCTGCAATGGATGCGGACGT
20 GATCACCATCGAGACTTCACGTTCCGACATGGAACCTCTGACCGCGTTCCGCGAATTCCA
ATACCCGAACGACATCGGCCCGGGGGTTTACGACATCCACAGCCCGCGCGTACCGACAGA
AGCCGAAGTGGAGCACCTGTTGCGCAAAGCCATCGAGGTTGTACCGGTTGAACGTCTGTG
GGTTAACCCGGACTGCGGCCCTGAAACACGCGCTGGAAGAACTCTGGAACAACTCCA
AGTAATGATGAACGTAACCCGAAACTGCGTGCCGAATTGGCGAAATAAGCCGAGACCGT
25 ATGAATAAATACCGTCTGAAAGCCTTTTCAGACGCTATTTTGTCTGATTGCGGCGCAAG
GGCGCAGTTGCCGGAATCTTTTCATTGACGTTGTTTTTTCTAATTGCGCTTTATAT
GTGGGAAACAGGCAATCGGAGTTGTGTTGATAGTTTTAAATAATTTATATTATTGAA
CTATAAATTATACAAATCATTTTGCATGGGGTAGAATGCCAGCGATTACAAATATTTC
TCAAACCAATCTATTAAGGAGCTTAAATGGCTTTCGAAGATCGTACCGGTCAAAGTA
30 CCTTCCGTAGTATTCGCAACCCGCGTCGGCGACACTTGGAAGATGTGTCTACCGATGAT
TTGTTCAAAGGCAAAAAAGTAGTCGTATTCTCCCTGCCCGGTGCATTACCCGACTTGT
TCTTCTTACACCTGCCGCTTACAACGAATTGTTGCGCGCTTCAAAGAAACGGCGTT
GACGCAATCTACTGCGTATCTGTAAACGATACGTTTCGTAATGAACGCTTGGGCTGCCGAA
GAAGAATCCGACAACATCTACATGATTCTGACGGCAACGGCGAATTTACCGAAGGTATG
35 GGTATGCTGGTGGTAAAGAAGACTTGGGCTTCGGTAAACGCTCTTGGCGTTACTCCATG
CTGGTTAACGACGGCGTGGTTGAAAAATGTTTCATCGAACCTGAAGAACCGGGCGATCCG
TTCAAAGTATCCGATGACGATACTATGCTGCAATTCGTTGCTCCCGATTGGAAGGCTCAA
GAGTCTGTGGCAATTTTCACTAAACCAGGTTGCCAATTCTGCGCTAAAGCCAAACAAGCT
TTGCAAGACAAAGTTTGTCTTACGAAGAAATCGTATTGGGCAAGATGCAACCGTCACT
40 TCCGTTTCGCGCCATTACCGCAAGATGACTGCCCTCAAGTCTTCATCGGCGGTAAATAC
ATCGGCGCGCAGCGAAGATTGGAAGCTTACTTGGCTAAAACTGATAGCTGTTGCTTAA
GGCGGTTTAAATTAACGTGTCTGATATACCGGATAGAGTTATTCGGGCGGTTCTACACTAC
CGCTCCGAATAACTCTATATTTATAAGAGAATTTGGATATTGTTGCACTCAATCGAAAT
TTGTTTTTATTTATCTGAATGATGTTTTGATTGGGAAATATTTAAATGCCGTCTGAAA
45 CCGATATGTTCTGTGTCGGCAATGTTTCAGACGAAAACGGAAGGACAAAGATTATGAAAA
AAATTCAAGCGGATGTCGTCGTAATCGGCGCGGTAAGTCCGCTATGGGTGCGTTTCGCA
ATGCCGTTTACATTCCGATAATGTTTACCTGATTGAAAACAATGTGTTCCGCGACGACCT
GCGCGCGCGTGGGCTGTATGCTTCCAACTCTTGATTGCCGCCGAGAGGCGCGTCATC
ACGCATTGCATACCGACCGTTTCGGCGTGCAATTGGACAAAGACAGCATCGTCGTCACCG
50 GTGAAGAGGTGATGACGCGCTTAAATCCGAGCGTGACCGTTTTGTGCGCTTTGTGCTTG
CCGATGTGGAAGAGTGGCCTGCCGACAAGCGCATTATGGGTTCCGGCTAAATTTATCGACG
AGCATACCGTCCAAATCGACGAGCATACTCAAATTACGGCAAAAAGTTTCGTGATTGCTA
CCGGTTCCGCTCCCGTCATCTGCCGCAATGGCAGTCTTTGGGCAATCGTTTGATTATCA
ACGATGACGTTTTCTCATGGGATACGCTGCCTAAGCGCGTTGCCGTGTTGGGCGGGGTG
55 TTATCGGTTTGGAACTGGGTCAGGCATTGCACCGTTTGGGCGTGAAAGTTGAAATTTTCG
GTTTGGGCGGAATCATCGGCGGCAATTTCCGACCCCGTCGTTTCAGACGAGGCGAACCGCG
TGTTCCGCGAAGAATTGAACTGCATCTGGATGCTAAACCGAGGTCAAATCGATGCAG

-696-

ACGGCAATGTAGAAGTCCATTGGGAGCAGGATGGCGAAAAAGGCGTATTTGTTGCCGAAT
ATATGCTGGCAGCCGTGGGCGCGCGTCCGAACGTTGACAATATCGGTTTGAAAAATATCA
ATATCGAAAAAGATGCGCGCGGCGTACCTGTTGCCGACCCGCTGACCATGCAGACCAGTA
TTCCGCATATCTTCATCGCAGGCGATGCGTCCAACCAACTGCCTCTGCTGCATGAAGCTG
5 CCGACCAAGGCAAGATTGCCGGCGATAACGCGGGCCGCTACCCGAATATCGGCGGCGGTT
TGGCGGCGCAGCACCATCGGCGTGGTGTACCAGTCCGCAATCGGCTTTGTCGGTCTGA
AATACGCGCAGGTTGCCGCGCAATACCAAGCCGACGAATTTGTATCGGCGAAGTATCGT
TCAAAAACCAAGGCCGCGAGCCGCGTGATGCTGGTGAACAAAGGCCATATGCGCCTGTATG
CCGAAAAAGCCACCGGCCGCTTTATCGGCGCGGAAATCGTAGGCCCTGCCGCCGAACATT
10 TGGCGCACCTGTTGGCTTGGGCACATCAAATGAAGATGACCGTTCCGCAATGCTGGATA
TGCCGTTCTACCATCCCGTTATCGAGGAAGGTCTGCGTACCGCGTTGCGCGATGCCGATG
CGAAATTGAAAGCCTGACCGATATGGCAAAACAATGCCGTCTGAAATTTTTTCAGACGGC
ATTTTGTGTTTTGGGGATGGGGTCCGATGCTGATACCGTGTGCGGAAGGGGGCGGCAAAAC
TAAAAATCTTTCTATTAACTGCTGTTCCACGCGTGTGTCAAAATCTATCAGTTTG
15 TTTTAAATACACTGTTCAAATGGGATAAAACAGGTAAATTAACGTTTATGTAACCCA
GTGTAGCAATGGGTTTACGGTTTTGAGTCGATATATAACTACAGAGGAATTGACTATGT
CTGCCAAACCGCTCTCTGTTTATCTGGATTGCCGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 280>:

20 gnm_280

GCATACACGCCTTAACCTTAATTTGCAAAATGACCGTGCCTAAACAATGCCGTCTGAAAG
TGGAGATTGGTTTTTTCAGACGGCATCGCCCGAGAGATGTGCGAAATGGACTTTATCCCAT
TCCTTTTCGGTTGAAACCCGCTCTGTTTATGGCGATAGAATCTAATCGGAGGGTAGTCTCG
TTCCGGCAACACGCACTGCGGTGCTTGATGTGCGTCCCTGTTGAAACATATAAAGCTC
25 GGAGAAAGTATAGTGGATTAAATTTAAACCAAGTACGGCGTTGCCTCGCCTTGCCGTA
TTTGTACTGTCTGCGGCTTCGTGCGCTTGCTGATTAAATTTAATCCACTATATATAA
GGGCATCATTCTGCACCGGCAAGAATCCGAACCCGAACGTTTGAACCAATCCCGAATC
TCCGAATTCGCCCTGTGTGGGAATGACGAAAAACAAGCATTATTTGCCCGAAGCAG
TTAATCAACCCTTTCCGCCACACACCTATTCCAATATCCAATGAAACCATCACAGAAAC
30 CCTAAATCTCGCCCCGAAAGGCAAAACTTCTGACCGCCGATTGGCCCGCGCCGCCAA
TGTGAAAACCCGTATTACACGCGCAACGGCGCGGTGACGAGAGGTGCGTATCAGAGTTT
GAACTCGGTACGACGTGCGCGACAATCCCGAAGCCGTGCGCGCAACCGCGAAATCGT
GCAACAGCAGGTGCGACTGCCGCTGCTACCTCAATCAAATCCACAGCACCGTCTGCTG
CAATGCTGCCGAAGCGTTGGGAGGCACACCCGATGCGGACGCTTCCGTAGACGACACGGG
35 CAAGGTTGCCTGTGCGGTGATGACCGCAGACTGCCTGCCGTTCTATTTTGGACAGGGC
GGGTACGGCGGTTGCCGCCGACACGCGGGCTGGCGCGGTTTGGCGGGCGCGCTACTGCA
AAACACCATAGCCGAATGAAGGTTCCGCCCGTCGAAATGATGGCGTATCTCGGCCCGC
CATCAGTCCGGATGCGTTTGAAGTCGGACAGGATGTGTTGATGCGTTCTGCACGCCCAT
GCCGAAGCCGCCACCGCATTTGAAGGCATAGGCAGCGGCAATTCCTTGCCGACCTTTA
40 CGCGCTCGCCCGCCTGATTCTGAAGCGCAAGGCGTGGGCGGCGTATATGGCGGCACGCA
TTGTACGGTTTTTGAACGGGATACTTTCTTTTCTACCGCCGCGACGGAGCGACAGGGCG
TATGGCGAGCCTGATTGGCTGGACGGCAATGCCGTCTGAACACGCGCTGATATAATCT
ACCGACTTTGTGTTTTTGAAGGCAAGCCATGAACAAACTGTTTCTTACTGCCGCGAGT
GCTGATGCTGGGCGCGTGGGTTTCCACCTGAAAGGTGACAGCGGCATTCTCCGCCGCT
45 GACCTACCGGAGCTGGCACATCGAAGGCGGACAGGCATTGCGGTTTCTTTGAAACCGC
GCTGTATCAGGTTTCGGGCAGGGTGGACGATGCTGCCGCGCGCAGATGACCCTGCGTAT
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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 281>:

gnm_281

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TTGCCGCGGATTTCCGCGCGGTTGGCAGGCATAACCTGCATCAGCCCCCTGCGCGCCTACG
CGGGATTGCGCGCCTATAACGAAGCGGCTTTCCTGACGAATCAGCCCATAAACCAAGCC
GGATCGACATTAACATTTTGCCTGTGGCGGATTACCGTGTCTTTAAACGCGGAAATATAG
CGCAAGGTGTAGTTGAGTTTGCCTGTGCGGTTCCGCGCTGTTGACCGCATATCGTAA
55 AAACCGTGGTCAACGCGGTTTGCCTGCGCGGTCAGCAGCTTGTCTTCGTCAAAGCCGCT
GTGGCAAAACGCCATTCCGCTGAGCCTGACGGCGCATTTTGCATCACCGGCAGATTGG
CTGTTTTGGAACAGTACCAGTGCGCGTTTACTGCACCGTCTTCGCCATGCGCGGACG

CTGTTTTTGCCGGCATCGGGCACATTGTTGCGCGTATCGATTTTCCGACCCAATTCTTCC
CCTGCCAGCACCGCATAAAAATTCCTGCCCGTCGCTGCCGCTGTTTGTAAAGTTTTTCC
GCCTCTTGCGTGTGTCGGTTCGCGCGCGGCTGCGTGCCAGCCAGTAGAGCCAGGTCGGG
5 CTTTTTGCAGTTTTTCGGGCATATGCGAGATAACGGAGGCCAGCTCGTCCCAACGTCGG
GCGCGCAAGGCGGCGCGGGCGTACCACTCGATTGTTGCGTTCGGTTCAGTTGGCGGCGGTCG
GCAACCTTGCCGTAATAGTCCAAGGCGGCAGGCACATTGAGGTTTTGCGACTGATAATGC
CCCAATACGCCCCACGCGAAACTGCGTTGTTGAGGCTTAAACCGCTTTCCATTTTCGGAC
AGCAGGGCGGCGGCATTTCGGCGATTTCGCTGCTTCTTGCCGATGACGTTCAACAGGGCA
10 TATTGCGCGCAACCTTGTTGTAACGCCGTCAAACGGGCTGCCAATGCGGCGGCAAGGTTG
CGTGCGCTCTGTGGTTTGCGGCGCGGCCAGCAGTCCGCGCACGCGCCTCCAGGCGTCGTTG
CCGTCCAACAAGCCGGATGCGGCTGCTGTTCCAACAGTTTGGTGCAGCCCGAAGGCAGT
TTGCCCGTATTTTTGACCAGTTCAGCGGCACGCGTATAGTCGTTGCGGCTCGAATCGGCG
TAGCATTGCACTTCTTGGGCGCGCCCTGCCGTTTCGAGTTTGGCGTATTCTGTGCAAAC
AGCGTCCACTGTCTGCGTGCGCCAAAGACTTCAGCCACTCGTTGCGGACATTTTCCGCC
15 ATCGCGCTGTGCGCGCGTTCCTCAAATAGGCGGCGACGGCGGCATCGTTTTCTGTTTC
ACTGCATCCAGTGCGGACGGGTAGCCGCCGTAATCTGCCAGCGTTTTTCTTTCGGGTTTCG
GCAGGGCGGGTGGGAACGCTTGCCGAAAGGTCGGCAGTTTCTATATTGTCTGCCGGGGTC
TTGCCGGCTGGCAGTGTGTTTGTGCAAGAACACGCGCAAGCACCAGGGCCGCCAGCAGC
GGCAGGGAATGCTTCATAGAGGGTAGGTACATCGGATTTCCTTAAGAATCGGAACCCTGA
20 ACGGTTCAGGGTTGGAAAAGACAAAATGCCGTCTGAACAGGCGTTTGGCCGAATTATATGC
CGAAACTGCACCGCTTTTGAATGTTTCCGACATAATTTATAGTGGATTAAACAAAACCA
GTACGGCGTTGCGCTCGCCTTAGCTCAAAGAGAACGATTCTCTAAGGTGCTGAAGCACC
GTGAATCGGTTCCGTACTATTTGTACTGTCTGCGGCTTCGTGCGCTTGTCTGATTTTTG
TTAATCCACTATGTTTTTCAATTATTTGCCGTTTGGTGCGAACCGCTGCCTTTGCC
25 TTTTCAGACGGCATTGTCCGAAATGTTTGGCGCTTCTGCTTTATTGACAAAAAATGC
TTTCCCGATAATATCTACGAAATTAACCTGCCGATTGACACAGCTTGCGGGCATAAC
AGCTAAAGCGTTCGACAATTTAGCTTTATCTTCCGCGCCGTTGTGTCCGACATCGGG
CTTTGTTGTATGGGAAAGACAATGATTATTTGGACAAGGTTTCCAAGCATTACCAAACG
CGCGACAAGACCCGTTTTGCGCGCGTCGAGCCGACCAGCCTCGAATCCGCGACGGCGAA
30 ATCTTCGGGCTGATGGGTATTTCGGGTGCAGGCAATCCACCCTGTTGCGCCTGATTAAC
CTGTTGGAACGCCCGCAGCGCAAGGTCAACGCTGCGGACAAGAGCTGACCGCGCTCGA
TGCCCGCCGATTGCGTCAGGCTCGGCAGAATATCGGCATGGTGTTCAGCAGTTTAATCT
TTTGAGCAACCGCACCGTTGCGGACAATGTTGCCTTTCCTTTGGAAATCGCCGGATGGCC
GTCTGAAAAAATCAAAGCGCGCTTAAAGAATGCCTTGAATCGTCGGCTTGACCGAACG
35 CGCCGGCCACTATCCCGCCAGCTTTCGGCGGGGAGAAACAACGTGTGCGCATCGCCCG
CGCACTCGCGCCCAAAACCCCAAGTCATCTCGCAGACGAACCCACTTCCGCCCTCGACCC
CGCCACCACGCGCAGCGTCTTGAATGTTTGAAGACATCAACAAACGCTTCAACGTAAAC
CATCGTCATCTAACCCACGAAATGAGCGTCATCCGCCGCTGTGCGACCGCGCCGCTT
CTTGGATAAAGGCAAGTCGTGAAATCGTCGAAGTACGCGGCAACCAAATCCAGCCCCA
40 ATCCGACATCGGGCGCAACTGATTGCGGAGGACTGATATGGCAGACTTAACATTCCAAC
AAGCCGTTTCCACCAwCGtCGGCATGAAAGACGAAATCTTCCGCGCCTTGGGCGAAACCT
TCGTGATGGTCGGCTTGTCCACCACATTCCGCCGTATCTTCGGCACGCTGCTGGGCGTGC
TGCTCTTCGTAACCTCCAGCCGCCAACTGCATTACAACAAGCTGGTGAACCTTCTGCTCG
ACAACCTCGTCAACCTCATGCGCGCCTTCCCTTCGTATCTGATGATTGCGATGATAC
45 CCGCCACACGCGCCATCGTCGGCAGCACCATCGGTCGGGTTGCCGCTCGCTGGTGTGA
GCGTGTGCGGATTGTTTTATTTTGGCCGACTGGTGGAAACAAACCTGCGCGAAGTCCCCA
AAGGCGTAATTGAAGCCGCGCGCGCATGGGTGCGCCGCGGATTGCCATCGTCTGCAAAG
TCCTCTTGAACGAAGCGCGCGCGGCGATGGTTTCCAGCATTACCGTGCTTGCCATCGGGC
TTTTGTACATACGCGCGGCGGAGGATGATAGGCGGCGGCGCTTGGGCGACCTCGCCA
50 TCCGCTACGGCTACTACCGCTACCAAACCGAAGTCATCATCTTCATCGTCGCCCTCCTCG
TGCTGCTGGTCATCTGATTCAAAGCACCGGCAACGCGTTGGCGCGGAAACTCGACAAAC
GTTGAACCGAATGCCGTCTGAACGCCAAAACCCCAACCGCTATCCGAAAAATGCTATAA
AATCCCCCTGTTGCGGGCAATGCCGTCTGAACGCCGAATCCGGACGGCAGGACTCCCTG
CCCGTCAATTTTGTGAAACTGCCACAACATCAGGAGAAATATGAAAACCTTCTTCAA
55 AACCTTTCCGCGCGCGCACTCGCGCTCATCTCGCGCCTGCGGCGGTCAAAAAGACAG
CGCGCCCGCGCATCGCTTCTGCCGCGCGGACAACGGCGCGGCGAAAAAAGAAATCGT
CTTCGGCACGACCGTCGGCGACTTCGGCGATATGGTCAAAGAACAAATCCAAGCCGAGCT

GGAGAAAAAGGCTACACCGTCAAACCTGGTCGAGTTTACCGACTATGTACGCCCGAATCT
GGCATTGGCTGAGGGCGAGTTGGACATCAACGTCTTCCAACACAAACCCTATCTTGACGA
CTTCAAAAAGAACACAATCTGGACATCACCGAAGTCTTCCAAGTGCCGACCGCGCCTTT
5 GGAQTGTACCCGGGCAAGCTGAAATCGCTGGAAGAAGTCAAAGACGGCAGCACCGTATC
CGCGCCCAACGACCCGTCCAACCTTCGCCCGCTCTTGGTGATGCTCGACGAACCTGGGTG
GATCAAACCTCAAAGACGGCATCAATCCGTTGACCGCATCAAAGCGGACATCGCCGAGAA
CCTGAAAAACATCAAATCGTCGAGCTTGAAGCCGCGCAACTGCCCGTAGCCGCGCGGA
CGTGGATTTTGGCGTCGTCACGGCAACTACGCCATAAGCAGCGGCATGAAGCTGACCGA
10 AGCCCTGTTCCAAGAACCGAGCTTTCGCTATGTCAACTGGTCTGCCGTCAAACCGCCGA
CAAAGACAGCCAATCGGCTTAAAGACGTAACCGAGGCCTATAACTCCGACGCGTTCAAAGC
CTACGCGCACAAACGCTTCGAGGGCTACAAATCCCCTGCCGCATGGAATGAAGGCGCAGC
CAAATAAGGCAGTCGTATAAAATGATGCCGTCTGAACTGTATCCGTGTTTCAGACGGCATT
TTTGTCTTTAATCCGCCATTCCCTGCCATTCCGCCGAATCCGGCGTATCGATTCCGAAC
15 AGCGACAAAGCGTGTGCAACACTGTGCGCCACTATGTCGTCCGCCGTCTGCGGTTTGGCG
TACATCGCAGGAACAGGGGGAACACACCGCCGCTTTCCGTTACCCGCTTCATATTG
TCCAAATGGGCAAGGTTACGCGGCTTTCGCGCACCATCAGCACCAGCCGCGCCTTTCC
TTCAAACACACATCCGCCGACGCGTCAGCAGATTGTCGCCGAAGCCGTGCGCGACAGAG
GCAAGCGTCCGCATCGAACAGGGGGCGACAGCATCCCATCCGTTTTAAACGTACCGCTG
GCAATGCACGCCCCGATATTGCCGATCGGATGCACGAAGTCCGCCAAGGCATATACCTCG
20 TCTCTCGCATAGCCGTTTCCGAAGCGCGGCCATCTCCGCACCTTTCGATACCACAAGG
TGCGTTTCGACATCTTGGCGCGCAAAAGTTCAAAGCCTTCAGCGCGTATTGGAAACCG
CTCGCCCCGCTGATGCCGATTATCAAACGCCGTACCATCATCCGCTTTCCATAAAACC
GCCTGCAACGGCAACACCGCTATTATAGTGAAAAACAGAAATCCGATAAACCGCGATAC
25 AAATTGTCCGCAACACCCAATATCCGATAAAATACCCGATTAAACATCCTATCTGAATAG
GCACGGGAGGGCGGTATGGCAAAAGTAAAGGCGGATTGGGGCGCGGCTTGGATTTCGCTG
CTCGCCAACGGCGCGGACACAGCAGCGCGGACCGATTGACCACGGTTGCGGTTAAAGAT
ATCCGGCCCGGCGGCTATCAGGCGCGTGTTCAAATCGATGACGAAGCCTTGACGGAACCTG
GCAGATTTCGATTAAGGCGCAAGGCGTGATACAGCCCGTCATCGTGCGCAACACGGACTG
TCCCGATACGAATGATTCAGGCGAACGCGGTTGGCGCGCCGACAGATTGCCGCGCTG
30 ACCGAAATCCCGCGGCTTATCAAACCATCAGCGACGAACCCGATTGGCAATGGGTTTG
ATCGAAAACCTCCAGCGCGAAAACCTCAACCCCATCGAAGAAGCACAAGGCTTGAACGC
CTTGCCGACGAGTTTCGGGCTGACCCACGAAACCATCGCCCAAGCCGTTCGGTAAAGCCGA
AGCGCGATTTCACACAGCCTGCGCCTTTTAAAGCCTGCCCGAACCCGTGCAGGAAATGCTT
TACCAACGCGCGCTCGAATGGGGCAGCCCCGCGCATTGCTGACCCGTGCCGTCGTGAA
35 CAGCTCGAATTGGCGCAAAAGGCGCTCAAAAACGGCTGGTTCGGTGCGCAAGTCGAACGC
CGCAGCCAGGCGCCCTTCAAACAAACGTCCCGAGCCCAAAAAGACTGCCGCGCGCGAC
ATCGGCCGCTGAATGATTGCTGACTGAAAACTGGGTGTCAACGCTGAAGTCAAACCC
GCCAACCAAAAAAGGAGGATTGTCCTGTATTCGATACGCCTGAAACGTTTCGGCCAC
CTGCTGGAGCAGTTGGGCATAGATTACCGGCCTTAATTTTTCGGGATATACCGTCTGAAA
40 TATAGAGAATAGCTTTCCAGATTTAAGTGGGAAATATAATTCTATTGACATTTTCTGC
TTCACGTAAGAAATCGTTTTCTGTTTTTCAATTTTAAATTTTCGAAGAAATTATGAACACAC
GCATCATCGTTTCGGCTGCGTTTCGTTGCGTTGGCATTAGCAGTTGCGGCTCAATCAATAA
TGTAACCGTTTCCGACTAGAACTTCAGGAACGTGCCGCGTTTGCCTTGGGCGTCAGCCC
AAATGCCGTAAAAATCAGCAACCGCAACAATGAAGGCATACGCATCAACTTTACCGCAAC
45 TGTGGGTAAGCGCGTGAGCCAATGCTATGTTACCAAGTGAATCAGCACAATCGGCGTTAC
CACTTCCGATGCAATTTGTTTGGGAGGCGGAACGCACAAAGGCAAAAGTCAATGCAATGC
TTTGCTTAAAGCGGCAGGAGTTGCTAATCCTTTATTCGGAAAAGGTCGTCTGAAAATAT
TTTCAGACGACCTTTTATTTATTGAGCAAATCCCCAACTGCCGACAATCCGACCGATA
AACTGCTACAATTTTCG

50

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 282>:

GNMCL71F gnm_282

CCGAAGTTGGATCGCTCTAGAGGATCCCCTGCCGATGTAGCGCGCTCCTGGTACGGGCAT

AATGCCCTGGGCTTCTTCTGACTGCCGGCTTCTTGGGTATGATGTACTATTTCTGTACCC
AAACAAGCAGCCCGCCCCGTTTACTCCTACCGCCTGTCCGTCGTTCACTTCTGGGCGTTG
ATTTTACCTATATGTGGGCGGGTCCGCACCATCTTCACTACACTGCCGTGCCTGACTGG
5 ACGCAATCTTTGGGTATGGTTCTGTCTTTGATTCTGTTGCGACCCTCTTGGGCGGTATG
ATTAACGGCATCATGACCTTGTCGGGCGCGTGGGACAACTGCGTACAGACCCGATTCTT
AAAATCCCGGATGGAACCTTGGTCTTCTACGGAATGTCTACCTTTGAAGGCCGATGAT
GTCGATTAACCGGTCAATGCATTGAGCCACTATACGGAAGTGGACCGTTCGCGCACGTTCA
TGGGGGTGCGTTGGGCTGGGTAGGCTTTGTAACCATCGGTTCCGCTCTATTACATGATTCC
CGTCTGTTCCGCAAAGAACAGATGCACAGCACCACG

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 283>:

gmm_283

15 TTGAACAGGTTACGAATTTGTTGTTGAATTTGTCCACGCGGCCGGTGGTATCAACGATTT
TTTGGGTGCCGATATAGAACGGTGGCACAGGGAGCAAACCTCGATATTGAAGTTTCTT
TTTCCATCGCGGATTTGGTTGCGAATTTGTTGCCGAAGAGCAGGTAACGTTGACTTCGT
GGTAGTTCGGGTGAATACCTTGTTTCATTTGATTTCCTTTCAAAAAGCGGGCATAGGGG
ATGTACCTATGCTACAGACAAGTCCGACATTCTCGCTATTTTCTGTTGTACGTCAAGAG
TATATTCGATAAAATGTATAGTGATTAAACAAAACAGTACAGCGTTGCCTCGCCTTGC
20 CGTACTATCTGTACTGTCTGCGGCTTCGTTGCCTTGCTTAATTTTGTAAATCCACTAT
AAAAAGTTCTTTTGAAGGAGGTTTGTATGGGATCAAATTTCTTTTCTGCTGCTGCGTTT
TGCCGGTTTCGGGTTGCCGCGCTCACATATGCGCGGCATCGGCATCGTCGGCAGACGGGT
GCGCGGTTTTTTGGCGCGCGGGTTTCTCCGCATATCGGACGCGGGGTCAATATCGAACG
CGGGGCGTATGTGTTCCGGATACGGTTTTGGGCGACGGCTCGGGCATCGGGGCAAACG
TGAAATCTGCGGTGGGCTGGTGGTCCGCAAAAATGTGATGATGGAGCCGAATGTCTGTT
25 TTATTCAAATAAACCAAGTTTGACCGTTCAAAAACGCTTTGAGGGCTACACGGAATC
CGTCCGATTACGTTGGAGGACGATGTCTGGCCGGGGCACAGGGTGATTGTAATGGCGGGC
GTAACCGTCGGACGCGGTTCCGTCGTGGGCGCAGCGCGGTGGTTACAAAAGACATTCCGC
CCTACTCTTTGGCGGCAGGCAATCCGGCAGTGGTGAAAAAGAATCTGCCGGAAGGTTGAA
TGCCGTCTGAACGTGTCCGGGCGGATGATCTGAAAAACAGGAACATCGTTTCTGTTTTT
30 TGCGCTTCAGACGGCATCGCTATTGCGCCACGCGGCTATCGATATCTTGGTAGAGTTTGC
CGAAATCGGGTTCCGCCGAGTAGGTTTTGAGGATTTCGCCTTTTTTGGCGATAAGGACGG
AAGTCGGATAAACCTGTGTGCCGAACGCTGTCCGACAGCTTTGTCCGCATCATACATGA
CGGTAAACGGCAAACCGTAGTCTTTGACATATTGGCGGACGCTTTCTATCGGATCGATGG
GCTGGGCGACGGCAAGTACTTGAAGTTTTTGTATTTATAGTCATTTGCCGTTTTAATGA
35 TTTTGGGCATWTCGCTCACACAACCCGGACAGGAGGGAACCAAAATTAATCAGGGTTA
CTTTGCCCTTGCAAGTTCGGCGTTGGAACGGTTTTTCCGTGCAGGTCGGGCAGGGAGAAGG
CGGGCGCGGTTTTGCTGTCCGGGATGAGGACGATGGCAAGGAGGATGCCGATCAGTGCGA
CGACGGCGGCGGTGAGTATTTTTTCATTCCGACAAGGCTTCCAATGCGCGGGCAAGGGT
GGCGGGCAGGCTGACGGTGCGTTGTGTGGCGGCGTGGACGGGCATCAGGGTGATGTCGGC
40 TTCTGCGGCGGTTTTGCCGTTTGGCAGTGAATCGTCTGGGTGAGCACAATACGGCGCGT
GCCGGGGGTTTTCAGGCGGCATGAAACTGCAATACGTCGCCTTCGACGGCGGGGCGGCT
GTATCGGATGTCGATGCGGGCGACAATCAGTATGAGGCCTGCCAATCGTGCAGCAGTCC
GCGTTCTTCAAAAACGCCCAGCGCGCTTCTTCGAAAAATTTCGAGGTAGCGCGCATTTGT
GACATGGCCGTAGCCGTGAGATGGTAGTTGCGGACGGTCAGCTTCATCAGTTCAGGTTG
45 ATGGGTGGAAGGCTTCGCGGGCAAGCGGTTCTGTTTCGAGGTCGGTGATGACGGTAGAA
AGCTGGATGTGCAACCATCTGTTGAAAATGTCGGCATCGAGCGCAGGCCACTCGCGTTTCG
TCTTCGCACCACTCGGCAAGTTCGGCGGGCAAAATGTCTTCAAAACGGGCTTCGATTTTCG
TCCATACTTCGTGCGGCGTTTCGCACGGGCGGACAAGGTAGGAATTGGCGTCGGCTTGG
ATGTCTTCAAGAGTCAGTCCGTGAGGTGGTTGCCGCGCAGGGTTTCAGCCAGTTCCAA
50 AAAGGTTCTAAAGGGATGAGGACGAATACGCTGCGGTTGACTTCGTACATGGTTTTTCCT
TTGCTGTGCGCGGTATGCGCAAAAAGAGATTATAGCCCAATCTGTGGTTTCGGACTGT
CCGTTCCGACAGAAGGGAATGCCGTCCGAACACGGATTTTCAGACGGCATGGCTTTAAGG
TTGTGTTCCAGGTTGCGTTTCCGCTTCCCTGCTGCTTCTGCCTGTGTTTCGGATACGGA

ATCTTCTTGAACGGCAGTTTCCGCCGCGCCGGTTTCGGCACTTTCGACCAATTCGTTCGAT
GTCGATGTTATCTTCCGTACCTTCGGCAGGTGTTGCACCGGTCTGCCGCGCACGGACTTT
CATATAGAGGTCGCGCGTGTAGCTGATTTTGTTCGATGGCGGGCTTCGTCCAGACTGTCCGT
5 CAAATCGAGCAGGCCTTCGCGCGTACTGACGGCGGATACGGCAGTCGTGCCCCAGCGTCC
GACAGGGGTGCGGAAGACGATATTCTTGGGCGAATAAACGGAGTAATACCGGTGCCGAG
CGCGTCGCGGACGGTGGACGGCCCTAAGACGGGCAACACGAAATAATTGCTGTTTTTCCA
TCCCCACGAGGCAACCGTGTGCCCAAGGTGTTTTTATTGTTCGGGAATGCCGCCCGCGCC
GGCGATGTCGATAAGCCCGCCAAACCGAAAGTGGTGTGATGCCGACGCGGACAAGGTC
10 TTCGCTTGCGCGTTTGATGTCCAAGCGCAAGATATTGCTGCCGAAGCTGACCACGTCCGA
CAGGTGTTAAAAAATTGGACACGCCGGCGCGGCTTCGGCGCAACTTTGCGGTA
GCCGCGCGCGGACAGGGGCGAAATGTAGCGGTTCGGCTTGGTTCGTTGAATTTGAAACGGC
GCGGTTGTAGCCTTTCATAAGGGTTCGGCGGGGCGGTTTCGGCAATGCAGGGGCGGAAGC
GAACCCGATCAGCAGGAGGAAGGCATAGGCGGTTTTTTCATGATTTAGCCAGTCTTTG
ATTTCTACAGTTCGGACAGCGCGCGCACGGATTTCGGGAATGCCGGTCAGCCTGACCGTG
15 CCTTTCGAACCGCGCAGCACTTCGAGCAGCAGCGACACGAGGCGGAATCGGCGCGTCCG
ACGCCGCTCAAATCAACCGCGCAGGTGTCTTCAGACGACATTGCTGTCTGAAGCGGGTA
AAAGCGCGCGCGGTGAGGGTTTTGACGGTGATGTCCGCCCGATGTGCAATATTCCGTTT
TTGAGTTCTGTATGCATAGCGTTTGCTCGGAAAACCCATACCGCCCTCGGACGGTATGGT
20 TTGTCGGTTATTTGCCGCGGTTTTTGGCTTTCAACTCGGCAATCAGTCCGTCCACGCCCTT
TCGCTTTGATAATTTCCGCCAATTGGTTGCGGTACACGGTAACAGGCTCGCGCCTTCGA
TGGCGACGTTGTAGGTACGGTATTTACCGCCGCTTTGGTAGGTGGTGAAGTCCATGTTGA
CGGGTTTTTGGCCGGGTACGCCGACTTCGGCGCGGACGATGATTTCTTTGCCGCTTTAT
TGACGATGGGATGTCTTTGACGTTGACGTTGGCGTTTTTAAATTCAGCATCGTGCCGG
AATAGGTGCGGATCAGCAGGGTTGAAATTCCTTGGCCAACGCTTGTTTTTGCGCGTCCG
25 ACGCGGTGCGCAAGGGTTGCCGACCGCCAATGCGGTACATCGTTGGAATCGAAATAGG
GAATCGCATAGGCTTCGGCTTTTTGGCGAGCGGTGTGGCATCGCGGTTTTTAAAGATGC
TCAATACTTGAGTGGCGTTTTGACGGATTTGGCTTACCGCGTCGCGAGGGGCGGCAATG
CCATGCCGATGCTCAAATACCGATGCCCAATGCCGTGATGAGGGAGGATTTTTTCATGA
TTAAGTGTCTAGTTTGAATATGATGGCATACGTTTATTCGGCGGCTTTTTCCGCATTGC
30 CGCCGTGCGGCAATTTCTCGGCAAACTCGTCATGAATTTGCCGATAAGGTTTTCCAGAA
CCATTGCAGAACTGGTTACGGAGATGGTGTCCGCCGCGCAGCAAGGTTTTCCGTGTCGCCGC
CCTGCTGCAGCCGATGTACTGCTCGCCCAAAAGTCCCGAAGTCAGGATTTGCCGCGAAA
CGTCGCTGCTGAACGTGATACTTGCCGTCCAAATCGAGGCGCACCTCGCCTGATAGGATT
35 TCGGGTCAAGTCCGATAGCGCCGACGCGCCGACCAATACGCCTGCGGATTTGACGGGGG
CATTGACCTTCAAACGCCGATGTCCCGGAAATCGGCATAAACGGCGTAAGTTTTGTCCG
AACCGCCGAACGCCGACCGCGCGGCCACGCGGAAAGCGAGAAAGCAACCGCGCGCGCGC
CAATCAGGACGAACAGTCCGACCCAAAATTCCAATATGTTCTTTTTTCATTAAAGTTCCTT
GAATATCCGATGTTCCGCGTTTCGTCTTCAGACGGCCTGTCAATCTGTAAACATCCACGC
GGTCAATATAAAATCGACCGCCAAAATCGTCAGGGCGGACGAAACCACGTCGCGGTGCT
40 GCGCGCAAAATGCCTTCCGAAGTCGGGACGCAATGGAAGCCCTGATGCACGGCAATCAG
CGTTACCGCCACGCCGAACGCGGCGGATTGATCAGACCGTTGATTACATCGTAATGTAT
CGTGATGTTGTTCTGCATTTCGACACGAAAAATACCGCTGTCCAAGCCCAGCCAGGTTAC
ACCAACCAAATACGCACCGAAAAATGCCCGCCACGTTGAAATCGAAGCCAAAAGCGGCAT
GGAAACACGCCCGCCCAAAAGCGCGCGCAACACGCGGCGACAGGGTTTACCGCCAT
45 CACATTCATCGCTTCGAGCTGTTTCGGTTCGTTTCATCAGACCGATTTCGCTGGTTCATCGC
ACCGCCCGCGCTGCTGGCAACAAAATCGCTGCCAATACCGGACCCAGCTCGCGCAATAG
CGAAGCCGCGACCATATAGCCCAAAATATCGGCGGATTTGAATTTTCGACAACTGCGTATA
GCCCTGTAAACCAAGACCATGCCGACAAACAGCCCCGAAACGGCAACAATCAACACCGA
CAGCACACCGCGGAAATACACTTGGCGCACGCTCAGGCGCGGACGGACGAAAGCGGTACC
50 GGAATTCGCCAGAATGTTTCAGCAGAAACAGCGTGATACTGCCGAGGGATTGAATAAGGCC
GAGGGTTTTTCCGCCGACGGAACGGATAAAGTTCATAAATTTCTATGTGTAAAGTTCAAC
GGTTTCAGACGGCATCAACTCATTTATCCCAACAGGTCCTGCTGCAACGACGTTTGCGCC
GGATAACGGTATGCTACGGGGCGCTGCCAGCCCGGACAACTGGCGCACCCAAAGC
GAATCCAGTTTCGCGCATTTCTGCGGCGAGCCGGAGAACATAATTCGCCGTGCGCCAAG
55 AAAATCACCTGATCGACGATTTCCAAAGATTTTCAATGTGCTGCGTTACCATATACTG
GTCGAACGCAAGCCCTGTTGACGCGGCTGATCAAGTGGGCAATCAGCCCCAAGGAAATC
GGATCGAGGCCGTAACGGCTCGTCGTACAACATAATTTAGGGTCGAGCGCAATCGTG

CGGGCAAGCGCGACGCGGCGCGACATCCCGCCGGACAACCTCGGACGGCATCAGGTTTTCC
 ACACCGCGCAGACCGACCGCGTTCATTTCAACAAAACCAAATCCCGAATCACCAGCTTCC
 GGCAGGCGCGTCAGTTCGCGCATCGGAAAAGCGATATTGTCGAATACCGACAAATCAGTA
 AACAGCGCGCGGTGTTGGAACAATACGCCATACGCGCGCGGTGTTCAACAACCTCGTCA
 5 GCGGAAAAGCCCGCCAAATCCCCTCTCAATCAAAACCTGCCCGGACTGCGGACGAATC
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 GCGAAGGCGACGCTTTTCATTTGATAAAGGGGGATGGGCTCATGTACGGACGGACGGTA
 GGTTTGACGGCGTGATTTTAAGGCTTATCGGGAAGACGGGCAATTTTCAGACGGCATA
 10 GGACGGTAAATGTTGTGAAAATGCCGTTGTCGGCGGCGGATTGTTTGCTGTGGCGAAAAA
 GTTTATCTTTCAAATGATAACCTTTATCAGAAAACCTATGGAAAAGCAGAACATTTGAAC
 AGCAGCGGTTCTGCAATCTAGTCAAAAGCGGCGGCGGAGCTATGTGGAGGGCAGCTAC
 CGTTTCGATACTTTGTCCAACGGCATTTCATCCACGGCGGCACAGTAACGGCACGGTGT
 GATTTTTCAGCAGCGCCTCGCCGAACCTTATGTGTCGTTCTGTGCTCTTGCTGGAAGGC
 15 AGTTTGGACTTCGCATCAACCGCTGCCGCTTCCAAATCGATGCGGACGGCGGCAAGATT
 GTCCTAATTGCTGTCGGGGAAGAAGTCTGTTACGCCGCTATCTTACCAGGCGGCAAA
 ACGGTCAAATGACCATTAAGGTATGGAACAATGGCTGCTGCGTCCGGAATACGCGCGT
 TTCGACCCCTGCTTTACCGCGAACCGGTTCAGGATATGGGATTGCCCCGAACCTGCGC
 GGCTTGGCGGCATCTGCTGAAAGCCGTCCTGAAAGGGGCAATTTGGGCGAAACATTGCGC
 20 CGCGAGGCGGACGTGTTGCGGCTGCTGTCGGACTTGTGGGACACGGTTTCAGACGGCATC
 GGGCCGGCGGCGGGGCAACGGCGGAAGCAGACGCTATGCCGCTGTAAGACTTCAGCCGC
 ACCCTAAATGCCGCGTTTGGCGACGGCGCACACCAAGTCAACCGGTGACAGACGCGCTG
 AACATCAGTGAAAGGACGCTGCAACGCCGTATGCGCGACCATTTTCGGCATTACGGCAAGC
 GAATGGCTGCACCACAAACAAATGCAGCAGCGCTCTATCTGTTGCAAAACGGGGGAAAA
 25 AGCATAGGCGAAACCGCATATTTATGCGGCTACCGCCACGTTTCCAGCTTTACTCAGGCA
 TTCAGGCAATATTTTCGGCAGCACGCTGCGGAAACCAAAAAGAAAACCGGTAAGCCGCA
 TTTGATTTCAAACCCGAAATCCGCGTGTATAGTGGATTAACAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 284>:

30 gmm_284
 CTCGCACGTATGGTTACCTCAGGCGAGGCGGACTTGGCGATTGTTACGGAACGGATAGAC
 GACCATCCCGAAGTGGGAAAACCTCCCTGCTATGACTGGACTCATGCGGTTATCGTACCG
 AACGACCACCCCTTGCTCGAATGCAGAAACCCCTCCGTTATGAAGATTGCGGAGGTTT
 CCGCTGATTACTTATGAATTTGCATTCAATGCGGGCAGCAGCATCGCGCGGGCATTTC
 35 AAAGCCCGTTTGAACAACCCGATGTCGATTGGCTGCGGCAGATACGGACGTATTGAAG
 ACTTATGTGCGCTTGGGTTTGGGCGTGGGACTGATGGCGAAAATGGCGTACAACCCGGAT
 ACGGACGGCGATTGTCAGCTTGTGGATGCGGCACACCTGTTTCGAGCCGTGCGCGACGTGG
 ATTGCTTTGCGCAGCGATACTTATTTGCGCGGATATGCCTACGACTTTATCCAAGCGTTC
 GCGCCGCACCTGACACGCGAGAAGGTGGATAGGATTCTGTACACGCCCATCAGCGAGGAT
 40 TTTTCGATTTAGCGGCTGCGGTTTTCAGACGGCACTTTGCGGCAGATACAACAAACAG
 GACAGATGTTTTCTGCTGCCCTGTGTTTATTGAGAATGCTGTCTGAAATGTTTCGTACGGG
 TTAATCAAATGGCGTGCGAGCAGCCGACACCATTTTTTCAACACCTGCAGATTGAGGA
 TTTTGATGTGCTTATGCTCGACGGAAATCAATCCTTCTGATGAAATTTAGATAATGTGC
 GGCTGACGGTTTCAAGTTTCAGCCCGAGATAACTGCCGATTTCTTCGCGGGACATTCTTA
 45 AGATGAAGTCGTTGGCAGCAAACCTCGGGAATAAAGGCGTTGGGAAAGGTTTCAGCAGGA
 AGCGGCAATCCGCTCTTCGGCGCGCATATTGCCCAACAGCAGCATAACCTTGGTTCG
 GCAGGATTTACGGCTCATCATGCGGAAGAAGTGCGTACGAGGCTGGGGATGTTTTGCC
 CCAGTTCTTCGATGTGGGTAAACGGCAGTTTCGCACACTTCGCTGTCTTCAAGGCGACCG
 CGTCGCAACTGTGCACATGGGAACAGATGCCGTCATGCCGATGAGTTGCCCCGACATAA
 50 AGAAACCCGTACCTGATCGCGGCGCTCTGACTGGCGACGGTTGTTTTGAAGAAGCCCG
 AACGGATGGCAAAGAGCGAGGTAAGGCTTCGCCGACACAGAACAGGTATTCGCCCTTTT
 TCAGGCGGCGCTTTGACGGATGACGGCATCGAGTTGGCTGAGCTCGTTGGGCGAGCGC
 CGACAGGCGAGGAGGTTCCCGCAAAGAACAGGAAGAACACAGCGTTTTCTGATGTG

5 TAGTATTATGCGAAGCCATACCGTACCTTTTGTGCGCTTTGCCCCATCATGATTATAGT
GGATTAAATTTAAACCAGTACGGCGTTGCCCTCGCCTTGTCTTATTTAAATTTAATCCAC
TATATGTGCTTATTGACACATATCAAGACAGGTTTATCATACTGTGGCATTCTACCAAAC
TATCCAAAATTTGACTAACATCATAAAACCGCACACACACCATGAAAATCATTGAGAT
10 ACAGAACAATCACAATGTAAACGATGACCGCCCCGAGTTTGACCGCGCGCTGATTGCCAG
CCTGCCCGCCAGCGGCCGCGCTACACTTCTTACCCTACCGCCGACCGTTTCCATGACGG
TTTCCGCGAAGCGAATATATCAAAGCTTTACATTTGCGCGGTATGGGCGCGTTAAACAA
ACCGCTTTCCCTTTACATTACATTCCGTTCTGCAACACCATCTGCTACTACTGCGGGTG
CAACAAAATCATCACCAAAGACAAAAGCCGCGCGGATGCCTACATCGAATATCTTGAAAA
15 AGAAATGGAACCTGCTCGCTCCACATCTGAACGGACGGCACCAGCTTGCCCAACTGCACTT
CGGCGGCGGCGACCGCGACCTTTTTGAGCGACGAACAGATCGAACGTGTCTTCCGCATGAT
ACGCAAAACATTTGAGTTAATCCCCACCGGCGAATACTCCATCGAAATCGACCCGCGCAA
AGTCAGCGCGGACACCGTCTCATGCTCGGCAGACTCGGCTTCAACCGCATGAGCATCGG
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20 AACCAAAGAAGTCATCGATGCGGCGCGGAAGCGGGTTCAAATCCGTGAGCGTTCGATT
GATTTACGGCTGCCGACACAGACTTCGGAAGCATCAAACACCATCGATACCGTTTT
GTCGCTCGATCCCGACCGCTCGCCTTTATCACTACGCCCACCTGCCGACGTGTTCAA
ACCGCAACGCGCATCGATACCGCCCGCTTCCCGACAGCGAAGAGAAGCTCGATATGCT
GCAATACTGCGTCCAAACCTAACCAGACGCGGTACGTCTTCATCGGCATGGATCATT
25 CGCCAAACCTGACGACGAACCTCCATCGCCCTCAAAGAAGGCTTCTCCAGCGCAACTT
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CAAAATCGGCAGCACCTATTCCCAAACGAACGCGACATCGATGCCTACTATGCCGCCAT
CGACGAAGGCGACTGCCCATCATGCGCGGTACACGCTCAATCAGGACGACATCCTGCG
CCGCAACATCATTGAGGATTTGATGTCCGTTTTCGCGCTCGACTATCGGATTTACGAAAG
30 TATGTTTCGGCATCCCGTTGACCGCTACTTCAAAGACGAACGGCGATTGGAAGAACT
CGCCGGTTTGGGATTGGTGGCCTGAACAGCCACGGGCTGACCGTTACCCGAAAGGACG
CTTCCTCATCCGCAACATCGCCATGGTCTTCGATTACCACTGCGCCATAAAGAAACCAA
GGCGAAATATTTCGAAACAGTGTGATTGTGGCTAACGTACAATGCCGTCTGAAAGGCTT
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35 CATAACGTTCCGCACCTTTGTGTCCGACCGTTCCGAAACCAAGATATAGTGGATTAAACAA
AAACAGTACAGCGTTGCTCGCCTTGGCGTACTAGCTGTACTGTCTGCGGCTTCGTGCG
CTTGCTCTGATTTTTGTTAATCACTATACCAAACGGCATATCCCGACAGAACAGATTGTG
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40 ACGGCGCGCGGACAGGTAATGACCCAGCCAAACCGATGGGCTTCATCAGTTTCCAG
TTGGCATTGCGGTTGACAGACCGATACCGAGTACCGCGCCGACCAAGATATGCGTACTG
GACACGGGCGACCCCATCAGCGACGCGCCATCAGACGGAGGCGGCGGACAGTTCCGGCG
GTAAAACCGGAAGCAGGATGCATTTCCGCCAACTCGTACCAGCGGTTTTAATCACCTCT
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45 GGGACGACATTTGCGCGGCAACGCTGTTGGTACGCAAAACATCCATAATCGCGGCAAC
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AAGACCTGCATCCATGAAACATCTGAAAGGTGATTTGCCCAAGTCTTTACGCTTGAGG
CTTTTGGCAAAAACAAACGTCCCCATCCACACCGCGCGCTATCATAAAGATGGTCAGG
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50 GCGGAAATCATCATCGCGCGGAACGAAGCGATAAAGGGAATCCAAGAATGCAGTGCCTTG
TAGGAATCGACATTGTTTTACGGTTGTGCAACGCATAAAGACCGCGGTAATACTCCGAT
TGCAGCTCTTGGCGATCGAATTCGGGTTTCGTGTAATTTGCGCGTCTGTGCGCCATTTG
GTGGCGTACTCGACTTTTTTCGCTTTCGGACAAACCTCGAAAAACAGGCGGTGCCGTTCT
TTATAGGCCTTTTTTCTGCTTGATGCCCTTGAGCGTGCCTTCCGCCCAAGCGTTGTAA
55 TCTAAGACGTTTTCTTGACGCGCGAAAACAGAAAATAGGACACCGCGCCGCAACACG
GGCGACAATACCAAGAAACACCAATACCGCCGAGCTTGCCCCAACGTATCAAATCGCCC
GATGCGGCATCGTTTACCGCCATACATACCGCGCTGCCGACAATGCCGCGGATAATG
GAATGGGTGGTAGATACCGGAAGCCCTTTTTTCGAGGCAAAACACAGCCACAACGCCGCC
GCCAAAAGCGCGGACATCATAATAAACACAACTGTATGGGTTGAAATCAACACCCCTC
CTGACCTCAAATACCGCCGCAATCAGCAAAGCCTGCGGGATGGTCAGCGTACCGCGCCG
ACGCTGGTGCCGAAAGAATTGGCAACATCGTTGCCGCGCATGTTGAACGCCATAAACACG

CCGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 285>:

gmm_285

5 CGTGGAAATCGGCTCCGTACTATTTGTACTGTCTGCGGCTTCGTGCGCTTGTCTGATTTT
TGTTAATCCACTATAATTATTTTTAGCGTGTAACAAACAAACCGGCTGCATACCTGCAAC
CGGCTCAAATCAGCACAATTCCTTATCCAAATCCGCCAACAGGTCTTTAGAGCGTCTC
CGATTTCCCTGAAGCGTAACCGGACGGTTGCCGTCCGAACCCGATTCCGCACCTTCTGCAT
10 ACGGTGCAACGTGCTCTGCAATTTCAACAGTTTCACCACATCCAAACGGGTGTAGCGTT
CGCCGCGTAACCGACAACCACACCGTGATCATGCTGCCATTGCGCAAAACCATAGGGG
TGATTTGCAACAGTCCGCACAACCTCGTCCAGCGTGAAATAGCGTTTTCGGGAACCTTCA
AATCAACGTTGTTTGTCTAGTAGTGTTCACCATGCTTTTGAGTTTCTGGCTGGCATGG
AAAGTTACCACGCGCGGGCGGTAATCGGCACTTCCTCGCCGTTTATAGGATTACGACCC
GGGCGTTGCGGCTTGTGCGCAACTGGAATTTCCGAAACCGGAAATTTGATTTCTTCG
15 CCGCTTGCCAAAGTGCTGCGGATTTCTTCAAAAAGAGTTCGACGATTTCTTTGGCATCG
TTTTTGGTGACGTTGCTGACTTTGTCTACCAAAATATCGGCCAGTTCTGCTTTAGTGAGA
GTCATATGATTACCTTCTGTTGTAACAGTTGTGGATTATTACCAATTTTATTTAAAT
CAAGCGAATATTTATTTTAACTGCGAAGCGCGCCCTGCGCGGTTGCCGCGCAAT
CAGTTTTCCGATAAGCGGCTCGACTGCCTCATCCGTGAGCGTGTTCATATCCTGCAA
20 AATCACTTTGACCGCCACGCTCTTCATCCCTTCGGGCAGTCCCGTGCCGCGATACACGTC
AAACACGCTGATTTCTGTACCAACTTGTTCGCGCGCTTTCAGACAAGCAGCAATC
ATCATGGCTCATAGCTTCCGCGATCACAAACGCCAAATCGCGCGCACCGGCTGGAATTT
CGATACGACCCGATAGCGGTTTTCGCGATTCCAACACGGCCGCGCATATCGATTTCAA
TACCAGCGGCGCTTGGCGCAGGTGATTTTGCAGCCATTTCGGATGCAAGTTGCGCGAC
25 AAAGCCGATGACTTTGCCGTCTGAAACGATATTGGCGGCAGTCCGGGATGCAGGCGGG
ATGTCCGTTTAAAGAACTCGACTGCTTTGTTTTCAACAGATTTCCACGTCCGCCTT
GATGTCGTAATAATCCGCTTGCAGGTTTTCCCGCCCCATTGTTCCGGCATGACCGCGCC
GTACCACAATCCGCGATGCGTTGTTTTGGACAACTGGCCGTCTGAACCTTTGCTGAA
CACGCGGGCGATTTCAAACACGCACACGCGTTTTGTTTGGCGTTGAGATTGTTTTGAG
30 AATTTCCACCAAGCCGCGATGAGCGTGGAACGCATCACGGCATACTGCGCCGCCAGCGG
GTTTTGACGCGGATGGGGTGGCGTTGGCGGCAAAATCTTGTCCCACTGCTCGTCAAC
GAAGGCATAGCTGACCACTTCGCGGTAACCGCGAGCGCCATTTCGTTGTAACCGCAAA
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GGGGATGTTTTCATAGCCGTAAACGCGTCCGATTTCTTCAATCAAATCAGCCTCAATTC
35 GATGTCAAACGGAAGCTCGGCGGTAACGCGGAAGCCTTCGCGGTTTTCTCGGGCTG
CAGGCCCAAGTGTGCAAAATGGTTTCCACCTGTTCCGGCAGGAATGTCCACGCCAACAC
GGTTTTGAGCGGTCCAAACGCAATCCAACCTGCTTCGCTTCAGGCAATTCGCCTTGCGC
TTCCACCATCTCGCTGCCGACCAACCGCAATCTGCAACACCAATTCGGTAGCACGTT
AATGGCATCCGCTGCAACCGGTAATCCACGCGCGCTCGAAGCGGAACGACGAATCCGA
40 ACCGAAACGATATTGGCGCGATTGCGGCGATGATTTGGGCGCAACCAAGCGCTTC
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CAAACCAACACGCCTTTTCGTCCGCCACGACGAGTGTTCAGACAGGGAACGGT
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45 GCGGATGTCCACAGCGCGGAAATACTGCGGATGCGGCTGCGCTCAAACGTTGTTTCAT
CCAATCCGGCGTAGTAGCGCGCGTTTACGTTTTCAATCACACGGCTGATAAACCGGCC
GCAATCCGCGAGGCGGTTAATCTGCACGGGCTTTTTGACTGCCCGTGATCGGCGCGGT
ATGGATTTCCGGGCTGCCTGAACGCGCACCCCGTCAATGCGGACACTTCGCGCGCAATGCC
TTTGATGCTCAAGCAGTCGCGCGGTTAGGCGTAATTTCAACGTAAACAGCGTATCGTC
50 CAAATCCAAGTATTCGCGGATATTGGTACCGACGGGCGCATTTTCAGGCAGAATGTGAG
GCCGTTACACCGCTCGTCGGGCGAGCCGAGTTTCGTGGTGGAACACAACATCCCGTCCGA
CACCTCGCGCGCATTTTGGTTCGGCTTGATTTTGAATTAACCGGCAAAACGGCACCCGG
CAGCGAACACGGCACTTTGATGCCCGCTTTCACATTCCGCGCACCGCACACAATCTGCAC

CAACCCGCCCGTACCCGCATCAACTCGGGTAACGTTCAAACGGTCTGCATCCGGATGTTT
TTCAACGGATTTCACCTTCGGCAATCACCACGCCCGCAAACGCAGGCGCGGCAGTTTCAGC
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GGTATCGGCTTGGGTTTTAGCCATGAGTAGGAGAATTGCATGGTTAATTTCTCTATATT
5 TTTAAGTTATTCAATAATAACAATAACCTGGATGCCAAAACGATTCTAGCTTCAGGTAA
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10 TGGCCTATCGAATGACGACCAAGCCATTTCCGCCATAGAAAAATTTAATGTCTCTGG
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AGTTTGGTCTGGCTTAATATCCCATTGTGAGTATTCATTATGAATTTATAATCACC
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15 CTTGTCAGGATACCGAGACATTAAGATCATGTTATCTTCATTGAAATAGTTATCATGTA
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20 GTGACAACAATTGTGTAATGGCCTTAATTTTATTTTATGATCTTCCAATCTTCTGAA
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25 TCATCCTTAAGCTCACCAATTTCTTCCAATAACTCTTTGGATAGAAGCTATAAATTTCC
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30 TCATGTGCTGCATTTACATAAGCATGACTACGACTATTTTCCGAGTTAATTGATGTTTA
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35 AATTTTTGAATATATTCAATTATTATCCAAGTGTTCAAAAATAAATACCCAATGGACTG
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40 ATTACCCAGCGCGCAGTTGTCTATCTATTTTCTTATTCTCTCTACAATTTTTTTAATTA
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GAATATTCCAATCAATAGGTAATGATGTTAAAGCATTAACCTAATGGTGTTAAAACTC
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45 AAGTTGTATTATAACTTTTAATTTTTTACCATTTTTTTCTTTGGATAATGTTCTATAT
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50 CAGAATCAAAAATATGAGTTTGAATATAATTCGCAACCAATAAATCTTGCAAAATTA
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TGCCTTGACAAGGAGGAGAAGCAATAAAAAATCTAATCGATTCCGGCAGCTCTGTATTA
55 AATTTGAAACACTTCTCATGAAGTATACCTATAATCATTTTACTTTCCGGGATATA
GAGCTTTATATAAATTAGCACGTTCTGGCACCATTCTTTGCAGCTATAATCTTAATAC
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TCATAGAACCAAACCCAAATTAACATATAATCTCTACAAAGCAATAAATTATGCCTCTT
TAAACAAAATTAGGAATGTAATTTACAAACAAAATATCAAATGTTTTATATCTTACATTT
GAATTTTCCTAAGCAGCCTGAAAACCAAGAGTAGGCTGCTTTTCCATATTCAGGCAGTCT
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5 GTCGTTACGTTGTAACGCAGCATAGCGAAGCGGTCGAGACCAATACCAAAGGCGAAACC
GGTATATTTTTAGGGTCGATATTGACGTTTTCAACACGTTAGGATGTACCATACCGCA
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10 CAAACCTTCCGCTGATGGAACATAGGCGAGTGCCTGGCATCGCTGTCCACACGGTAAAC
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15 CAAGGTGAGGGTTACGGGATGCGAGGCTGCCGCTTCCGTAGCGCGTCCGGGCGAGGTAAT
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20 GGCAATGCCTTCTGCAACGATGCGGTTTACATTTCCATAATATCAAGTCTGTCAATTAA
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25 ACTTTAAAGAAAGAAAATCAATCACATAGAATTTCTGCAACAAAGAAAAAGGAAGCCG
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30 ACGGTACGCGTATTGACCGGCTTTCATTACCGCTGCTTGGAACGCGGTAAACGTTTTT
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AACACCGCGTTTTACGCGTGCCATTTCTAACTCCTTAAGCGTAGGGTAACATTTTAGC
AACAGAAGCCAAATCGCGATCATTTACCATAGAGGTACCGCGAGTTGGCGTTTGTTTTT
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35 ACCCAGTACTTTAAAGCGTTTTTTCGCGCTAGACTTGGTTTTCATTTTAGGCATGGGAAA
ACTCCATTGTTATCGGATAAGGCATTAGGGGTTTTAAACATCGGTTTCAAACACTTG
AACCACAATGACACGGTTTTTTCGCGCAATTGAAACTTACTCCGAAGCGGCAATCGGA
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40 TCCAAAAGTTGCGCGCGAGTTGCTGGTGAGCCATTTACGCGCGCGGAAACGCAATGTC
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45 GGCCATAGCCAAAGCTTACGAACTGAAACGACACCAAGCTGTCGCCTGACTCACTGAT
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50 CTGTTGTCGCGGATTTTGTAAACGATTTTTCGTTACGCAATCCAACTCGGCGCGGAAT
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55 TCCAGTTGTAATGTACCGCATTGCAAGAACGACCAAGGCATCTCTGACATGATATTG
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GTCAATGCCTCGCGCAACCTGCTCTGCTTATCCACACGTCATCTGAACCTGCGCGT

TTTTCAGGGCGAAGAGAAAGCTTGACGGATACATCATGGAAACCGAACTGTTGTAGATG
CGAATCAACAATTCATTGAACGCACGAGCCTCGCTGACGATTTGATCTTCGGTACAGAAA
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5 GGCTCATTGCGGTGGCAAGAACCGAATTCGCCAAACGCATCGGCAAATCTCGATACGAA
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TCGCGTTTTTCCGAACCTGGTTACGAACATATTATCTTTGTAGTTGTCCCAATGGCCGGAT
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10 CAAAACACCATGCCCGGCGCTTCGTCTTCAGGTGGAACAGATCCAATTGCTTGCCAAGT
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15 ATCGCCTCCGCACGCGGAGTCATGATTTTGACCACATCATAGTCTTGGGCAATCAATTCT
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TGCTTGACGGCATGCCCGACAAGATGCGCGCAGGAATGGCGGATGATTTTCGATGCGCTTCC
TGATCTTTTCGGAGTAATGATTGAACAGCAGAATCTTCAACAATCGGGTCGCACGCATCG
20 ACCAATTTGCGCTTTACCCTGCCTGCCACCGTCGCTTCGCCAAACCGGCACCGATAGAC
GCAGCAATTTGAGCCACGGTAACGGGGGATTTCGTATTGGCGGACTGAGCCGTCGCGCAAG
GTAATATTCAACATCAAACGCTCCGAAAGATTAAAAATAACGGCATAAATGCCGTTATG
GGAATTTGGTAGGCACGATTGGATTGCAACCAACGACCCACCATGTCAAGGTGGTGCT
CTAACCAACTGAGCTACGTGCCTTCAAAGAATTTTGCATTTTATCGGGTCGTTTTAATT
25 TTTGCAAGAGGTATGTGCGTTTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 286>:

gnm_286

30 GCACTTCAGACGGCATTATATGCCTTGCCCTCCATGCCGTGATGTTTCGATGGCAAAACCG
CTTCGGCGGTAGGCGGTAAAGCGTTTCGCGCGCTCGGCGAGCTCTTCCAAGCTGTTGCCG
ACGATTTCCAAAACGCGCGCGGCAAGACCGGAGCGGTGTTCCAAAACCGTCGGACAGG
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35 GCCTCGTATTGCCAAAGCATTGTGTCCAATTCCTGAAGCTGCCCGAACGAATCGGACCAC
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40 CGGCGGTAAATCGTGCCCGCGCGCGGGCGTGCCGATGTTTGGAAATGTCGGCAAAGTTGGATT
TGAGTTGGTCTTTGTAGGTCTCAAAGAGCGGCAGTTGCCATGCTTTGTGCTCCACGTTGT
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CGTGCCCCAAGGCAACAATACACGCGCGGTCAGGGTGGCGACGTCGATGACGGCTTTGG
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45 TGTTCAACACTTCGATGGTCAGCCCTTTCACTTTTTCACGACATCGCCCGGTTTGTGTTG
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GCAGTTTGACGGCGGCGCAGAAGGTGCTGATGACGGTTGCCGCTCCGCACATATCAAAT
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50 CGACCAATAGGGGGCTTCCGCGCTGCCTTTTGCGACCGACCAAAACGAACCCATGTTT
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TGGCGGTGCGCGCTAAAATTCGGGCGTGCAATCGTTGGGCGCGCGGTTGCCCAAGTCGC
GGCAGAGGCTTTGTCCGTAACTTGCGCTTCGGCGACGCGCAAGGCTTCTTTGACGGCGG

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CTTCGTGCGCGGTATGGAACACGGCAGTTTCAAATTTGGCGGGCTTGGCTTCTTTTTTGT
AGCGGTGAAACGGTAGGCGGCATTGCCGAACGCAATCGCAAACGCTTCGGCAACGGCTG
CAGCCTGCGCTTCTTCAAAGACGTGAACGTCCACATTGACCGTTTCTTGATTTCGCGCC
ATTTGGCGGCTTCGGCGGCGGCTTGTTCATGCGGCGGCGCGGTGCTTTTCAGACAGC
5 ATACGGCAACAGCCTGCAAACCGTTGCCTGTCGGGATTTTGTGTCGGCAAAATTTGAC
CTTCTTCAAGCGAAGACAAAAGGGCAAGGACGGTCGGGTGCTCAGTTGCGATGCTTCGG
TGACAGCAAATACTGTGCGCCTGCCTGCTGTTCTGCAAGATTTTCGGTTTTTGTGCTAA
ATTCCACGTTTATTCTCCTGATTGAGACGGTTGTCGGTAGTTTTTCGGACGGCCTTTCGCT
CAAAGACCGTCTGAAGACGGCTGGCAGGATTGTACCCCATTTGAAGCACCGTCTGAAAC
10 CTTGCGCGGACAATCCGCTGCGCCGAACCGCTTACCGCCCCCTGACCGCGATTCTATG
ATTTATCAAAGAACTCATCAAAGAACTCTCTTTTACCGCCGTGCGCATTTTCGTCGTC
CTCTTGGCGGTATTGGTCTCCACGACGGCAATCAACCTGCTCGGCCGTGCGCCGACGGG
CGTGTGCGCATCGATGCCGTGTTGGCATTGGTTCGGCTTCTGGGTATCGGTATGACGCCG
CTTTGCTGGTGTGACCGCATTTATCAGTACGTTGACCGTGTGACCCGCTACTGGCGC
15 GACAGCGAAATGTCGGTCTGGCTATCCTGCGGATTGGCATTGAAACAATGGATACGCCCCG
GTGATGCACTTTGCGGTGCCGTTTGGCGTTTGGTTGCCGTATGCAGCTTGGGTGATA
CCGTGGGCGAGACTACGACGCGCAATACGCTGAAATCCTGAAGCAGAAGCAGGAATTG
TCTTTGGTGGAGGACGGCGAGTTCAACAGTTTGGGCAAGCGCAACGGCAGGGTTATTTT
GTCGAAACCTTCGATACCGAATCCGGCATCATGAAAACCTGTTCTGCGCAACAGGAC
20 AAAAAACGGCGGCGACAACATCATCTTCGCCAAGAAGGTAACCTTCGCTGAACGACAAC
AAACGCACGCTCGAATTGCGCCACGGCTACCGTTACAGCGGCACGCCCGGACGCGCCGAC
TACAATCAGGTTTCTTCCAAAACCTCAACCTGATTATCAGCACCACGCCAAAACCTCATC
GACCCCGTTTTCCACCGCCGTACCATTCGACCGCCCACTGATTGGCAGCAGCAACCCG
CAACATCAGGCGGAATTGATGTGGCGCATCTCGCTGACCGTCAGCGTCTCTACTCTGC
25 CTGCTTGCCGTGCCGCTTTCCTATTTCAACCCGCGCAGCGGACATACCTACAATATCTTG
ATTGCCATCGGTTGTTTTTAATTTACCAAAACGGGCTGACCGTCTTTTTGAAGCCGTG
GAAGACGGCAAAATCCATTTTGGCTCGGACTGCTGCCTATGCACATTATCATGTTTGGC
GTTGCACTCATCTGTTGCGCGTCCGCAGTATGCCAGCCAGCCCTTCTGGCAGGCGGTT
GGCAAAAGTCTGACATTGAAAGGCGGAAATGAACCTGATTTACGTTACATCATCCGTC
30 AAATGGCGGTTATGGCGGTTTACGCGCTCCTTGCTTCTCGCTTTGTACAGCTTTTTTG
AAATCCTGTACGAAACGGCAACCTCGGCAAGGCAGTTACGGCATATGGGAAATGCTGG
GCTACACCGCCCTCAAATGCCGCCCGCGCCTACGAACTGATTCCCCTCGCGTCTCTTA
TCGGCGGACTGCTCTCCCTCAGCCAGCTTGCCGCCGCGCAGCGAACTGACCGTCATCAAAG
CCAGCGGCATGAGCACCAAAAAGCTGCTGTTGATTCTGTGCGAGTTTCGGTTTTATTTTTG
35 CTATTGCCACCGTCGCGCTCGGCGAATGGGTGCGCCCACTGAGCCAAAAGCCGAAA
ACATCAAAGCCGCGCCATCAACGGCAAAATCAGCACCAGGCAATACCGGCCTTTGGCTGA
AAGAAAAAACAGCATTATCAATGTGCGGAAATGTTGCCGACCATACGCTTTTGGGCA
TCAAAATTTGGGCGCGCAACGATAAAAACGAATTGGCAGAGGCAAGGAAAGCCGATTCCG
CCGTTTTGAACAGCGACGGCAGTTGGCAGTTGAAAAACATCCGCCGACGACGCTTGGCG
40 AAGACAAAGTCGAGGTCTCTATTGCGGCTGAAGAAAACCTGGCCGATTTCGTCAAACGCA
ACCTGATGGACGATTGCTCGTCAAACCCGACCAATGTCCGTGCGCGAACTGACCACT
ACATCCGCCACCTCCAAAACAACAGCCAAAACACCCGAATCTACGCCATCGCATGGTGGC
GCAAATTGGTTTACCCCGCGCGAGCTGGGTGATGGCGCTCGTCGCCCTTGCCTTTACCC
CGCAAACACCCGCCACGGCAATATGGGCTTAAACTCTTCGGCGGCATCTGTCTCGGAT
45 TGCTGTTCCACCTTGCCGGACGGCTCTTCGGGTTTACCAGCCAACTCTACGGCATCCCGC
CCTTCTCGCCGGCGCACTACCTACCATAGCCTTCGCCTTGCTCGCGGTTTGGCTGATAC
GCAAACAGGAAAAACGTTGAACCAATGCCGTCTGAACCTCTCTTACAGCGGCATTGTTT
TCATTGACACATTCCCACAGACAGATAGCCGTTCCCTATTACATTACCTGTCATAACAGT
TCCATTTTTGTTAAACTAGTCTATGATAGCGGTACAAATATTGTTTACAATATTTAACG
50 CAAATCATTTGCAACCCGACAAAAGAAAAACAGAAAAAGGAACAAAGAGATGTTAGAAGC
CTATCGTAAAGCCGCGCGGAGCGCGCCGCTCGGCATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 287>:

gnm_287

CGGCAGTGGACAAGTGACTGTTTCAGTCCTATTTCCAGAACGATGGCTCAGGTGCTTACCG
TATCGATGAGATTTCATTTCGATAACGGCAAAGTACTGGATGTTGCCACTGTCAAAGAACT
5 GGTACAGCAATCCACCGACGGTTCGGACAGATTGTATGCCTACCAATCCGGAAATACCTT
AAATGGCGGATTGGGCGATGACTATCTGTACGGTGCCGACGGGGATGACCTGCTGAATGG
TGATGCAGGCAACGACAGTATCTACAGTGGCAATGGCAATGATACGCTCGATGGAGGAGA
AGGCAACGACGCCCTGTACGGCTATAATGGTAACGATGCACTGAATGGTGGCGAAGGCAA
TGATCATTTGAACGGCGAAGACGGTAACGACACTCTAATCGGCGGTGCAGGCAATGATTA
CTTGAGGGGCGGACGGTTCGGATACTTATGTCTTCGGCAAAGGCTTCGGTCAGGATGC
10 GGTCTATAATTACGACTACGCTACCGGACGCAAAGACATCATCCGCTTTACCGACGGTAT
TACAGCCGATATGCTGACTTTTACCCGAGAGGGCAACCATCTTCTTATCAAGGCAAAAGA
CGGCAGTGGACAAGTGACTGTTTCAGTCCTATTTCCAGAACGATGGCTCAGGTGCTTACCG
TATCGATGAGATTTCATTTCGATAACGGCAAAGTACTGGATGTTGCCACTGTCAAAGAACT
GGTACAGCAATCCACCGACGGTTCGGACAGATTGTATGCCTACCAATCCGGAAATACCTT
15 AAATGGCGGATTGGGCGATGACTATCTGTACGGTGCCGACGGGGATGACCTGCTGAATGG
TGATGCAGGCAACGACAGTATCTACAGTGGCAATGGCAATGATACGCTCGATGGAGGAGA
AGGCAACGACGCCCTGTACGGCTATAATGGTAACGATGCACTGAATGGTGGCGAAGGCAA
TGATCATTTGAACGGCGAAGACGGTAACGACACTCTGATCGGCGGTGCAGGCAATGATTA
CTTGAGGGGCGGACGGTTCGGATACTTATGTCTTCGGCGAAGGCTTCGGTCAGGATAC
20 GGTCTATAATTACCATGTGGATAAAACTCTGACACTATGCACTTTAAAGGATTAAAGC
AGCAGATGTTTCATTTTATCCGTTCCGGAAAGTGATTTGGTGCTTAGCGCTTCTGAACAAGA
CAACGTACGTATTTCCGGATTTTCTATGGTGAAAACCATCGTGTAGATACATTTGTCTT
TGATGATGCAGCTATCAGTAATCCAGATTTTGCCAAGTATATTAATGCTGGCAATAATTT
GGTACAGTCTATGTCTGTGTTTCGGTCTAATACTGCTGCGACAGGAGGAAATGTGGATGC
25 CAATATACAATCCGTACAGCAGCCGTTATTGGTAACGCCATCTGCATAAGGAGCCTAATT
ACATTCATGGCTTAAAGTGAAAACAGCAATCAAGTTTATTTTGATTGCTGTTTTCTTA
ATATTGGGATAAGGGTCGTATTTAATTAACCTTAATCGGTGCACTTCTAGCAATATAGT
GGATTACAAAAACCAAGTACAGCGTTGCCTCGCCTTACCGTACTATCTGTACTGTCTGCG
GCTTCGTCGCTTGTCTGATTTTGTATTAATCCACTATAATTTTCAGACGGCCTTTTGCC
30 TTTTCAAATTCAAACCAATCAAACGGTTTTATTGCTTCATCGCGTTGGTCAAGGCTTGA
TGTTGTGGCGGTACATTCCGATGTAGGTGTCTGCGGGCGGCTGCGGAGTGCGTCGGAAT
ACAGTTTGGCGCTGACGTTGACACCGGTTCTTTGGCGATACGGTCAACCATACGGGTGT
CCTTGATGTTTTCGGTAAGACGGCTTTGATGCCTTCGCGTTTGATTGTGCGATGATGG
CGGCGACTTGTTTGGCCGAAGGCTCGGCTTCGCTGCTCACGCCCTTGCGGGGCGATGAATT
35 CGATATGGTAACGTTTGCCCATATAGGAAAAGGCATCGTGCCCGGTGAGGACTTTGCGTT
TGGCAGCAGGGACGGCATTAATGCGGCTTGTCGCTCGCTGTCAGTTTTTTGAGCTGCA
TTTTGGTAGTTGCCAAGCGTTGTTGATAATAAACTTTGCCCTTCGGGATCGGCCTTTATCA
GGGCTTTGGCAACGTTTTGGGCATAGGCGGACATAAGGACGGGGTCGTTCCAGACGTGCG
GGTCATATTGCGCGTGGTCATGGTGGTGTCTTCGTGGTTCATGATCGTGGTTCGTGATGGT
40 GTCCGCCTTCTTCTTCGGCTTTGAGGGGTTGGATGCCTTTGGTCGCTTCGGTATAGGATA
CTTTGCTTTGTTTGACGGCGCGTTGCACATCGGCAGCTTCAAGTCCTAAGCCGTTGAGCA
GGACGAGTTTTGCACTGCGGATTTTTTAATGTGCGCACTGGTCATATGATAGGCGTGCG
TATCTTGGTTGGCTCCGACCAAACCTTTGTATGGATAACGCGCTCTCCGCCGATTTGTTTGG
CTACGTCGCCTAAAATGCTGAAGCTGGTTACAACCGGCAGGGGGCGGCAGTTGCGGAGG
45 CGGTCAGCAATGCGGCAATAAGGGTGAGTTTGAGGTGTTTCATAACTGTTCTCCTGTGAT
ATAACGTAACATCTGTTATGGTAAAACAAGCCGCTGTTTGTTCAGCGGCTTGCGGGGT
CAGGTGGTGTGGCGGTGGTGGCTTTTGAGCCATTTGGCCAGAAATGCCGCCTTCTTTGCCG
AGTATGACGGCAAAGACATATCGGACGCTGCACCAGCGGATGAT

50 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 288>:

GNMCS11F gnm_288

CCGGCACCACGCCTTACGACACCGCCACCTCGAAGTGATGTTTCGACCAATGTTTCAGCC

-714-

AGATTGACTATTTGCGCCGCAAAGGGACGGGCGCCGGCTCCGGTTCGTCCGGTCAAAGTCG
CCCACCTGCTCGAACGGCTCCGGCAGACCGTAGACCGTCTGAAGCTGCTCACCGACATCC
AAACCGGCGCCGGCAACAGCAACCGCTGACCATCGCGCTGATGAAGTCCCTCATCTACG
CGGCGGTGGAACAATACAGCACCCGCCACCTGCGCCGCGCAGCATCCGTATGCTCGCCCG
5 CAGCATTACCGAAAACAAAAGCCACCACGGCGAACACTACATCACCCGCAACCGCAAAGA
ATATTTCAAATGTTCTACTCGGCGGCAGGCGGCGGCATCATCATCGCCCTAATGGCGCT
GCTCAAAATCCGCATCGGCTCACTCGGCCTCAGCCCCTTCCTCACTTCCTTGTCCGGCTGG
GTTCAACTACGGCATCGGCTTTATGATCATCCATATGCTGCACTGCACCGTCGCCACCAA
GCAGCCCGCATGACTGCCGCCAGCAGGCAATCGGAGTAAAAAATGAACCTTGATTTAAC
10 CGCGCAAAAGTCCGTCTTTCTTGAAGGATATTCTGTGGGGGTATGGGAATAAATA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 289>:

GNMCS48F gnm_289

TGCTGGCAGCAAAGAAATCTGCACGATTGTCAATGGTGTGAAATACTTGTCAAATCTTG
15 TAGATGCCCTTGTGAGTTATATAAATAGCCAAAACCTTCTTGGCAACCCGTGATACAT
CCGAAGGGATATACTTCCACGCAGCAGGCATGGCAATATATTTAATAGATATATTAATGC
CGTTTCTGCAACCATCGCGCAATGGGTTCCCTAGAATAGACTTGTGAAAGTCCGTATCAA
TTACTTTGCGAAATTGTTTCATCCGTTTTGATGGCATTACTTTTCCATCGTAGTAGTGC
AAGTT
20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 290>:

gnm_290

GTCGACTCTAGAGGATCCCTGGGATTGAGTTTAGACCAGACTGCTCATTATACTTTATG
CAGGTTTGTAAATATTTGGCAAACCTTCATAAATTATGCCTTGTAAATCAAGTCATCAAATA
25 AGCATGTAAATACTACTATAGAAATTAAATTACAAAATATTATGTATTCTTTTGTGTA
CAAAGGTACCGAGCTCGAATTCGTAATCATGGTCATAGCTGTTTCTGAGTGAATTTGT
TATCCGCTCACAATCCACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGT
GCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCTTTCCAGTCG
GGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGCGCGGGGAGAGGCGGTTTG
30 CGTATTGGGCGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 291>:

GNMCS78F gnm_291

CCGCGCAGGCGGCAATCTATCGGAAATGACTGAAACCTCGAGATTCTAGATTCCCACTT
35 TCGTGGGAATGACGGTTCAGTTGCGTTCCAACAACACCGCAATCTCGAAATCCGTCATT
CCGCGCAGGCGGAAATCCAGACCTCCGACGCGGCGGGAATCTATCGGAAATGACTGAAAC
CTCGAGATTCTAGATTCCCACTTTCTGTTGGGAATGACGGTTCAGTTGCGTTCCAACAAC
CGCAATCTCGAAATCCGTCATTCCACACAGGCGGGAATCTAGACTCCTGACGCGGCGGG
AATCTATCGGAAATGACTGAAACCCCGAGATTCTAGATTCCCACTTTCTGTTGGGAATGACG
40 GTTCAGTTGCGTTCCGACAACACCGTAATCTCGAAATCCGTCATTGCGTACAGGCGGGA
ATCCAGACCTCTGACGCGGCGGGACTCTATTGGAATGACTGAAACCGCGAGATTCTAGA
TTCCCGGTTTTGTGGGAATGGCGGCTCACTTGCAATCCGACAAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 292>:

GNMCV37R gnm_292

TCGGCATT TTTTATCCGTTT TGGGGGTA ACTTGT TGGAAAGCTGCAACTTCATAAATA
CAGGATTACATTTAAGTTT TGGGTAACCTTTTAAAAAATGCGTGATGACTTTTGCATT
TTTAAGGCGTTT TGGGGTAATT CGTGAAAAGTTACCCCAAAGTTACCCATAAATGG
CGAAAACCTCAAGCATACGCCAGCATCTGCAACACAAAAAGCCTTGAAACTGTTGAAGT
TCAAGGCTTTT TGTGTTGCAGGATCTGCTGTCAATAGGGTATGGTGGAGGCGGGGGTA
TCGAAACCCCGTCCGATATTCTCTACAAAGCGTTCTACATACTTAGTTGTGTCTATATG
AGAATCTTATTTCCATCATGCCGACCAACAGGCTTTATGGATACCAGTTACCTTAAGTCT
T

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 293>:

GNMCV44F gnm_293

GACGGCCAGTTTCGCGAAAACGACGGCCAGTGCCAAGCTTGCATGCCTGCAGGTCGACTCT
AGAGGATCCCGCGATGGCTTGTGCGAGTTGGGGCAGGATGGGGCGCTTGCAGTCCGGGT
TTTGGCTTAAAAATTGGGTGATGAATTCGGGCAGTGGCACGCAGATGCGGCGGATTGCT
TGGGCAGTGCTTTGATTTGCAACTGGATTTTTTCGCGTATCATGCCGGGCACAGCCATT
CGTGCGACGGCGCGTGCAGGCGGTTGAGGACGGTCAGCGGCACGGTCATGGTCACGCCGT
CTAGCGGATGGTGCGGCTCGAAGCGGTAGGAAAGTTGAATTTGCCGTCTGCGGTTTGCC
AGAATTTGGGGAAGTGTCTTCGGTAATGTGTGCGGCGCGTGTTCATCAGATCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 294>:

gnm_294

GCCCCACCAACCTGTGAGTCTCCTTGCCCTGCTGGTGTGTGGCCGCCCACTCACCCATG
CATCATGACCCGTGGGATCTCAGTAGCCAGCGTGCACTGATTCTGCGCACTTATCAGTGC
CTTCGTACACTTTGCCCACTTCCACTTCGGCAGTAATCTGCTCGATGCGTTTTTTCGCCG
CATCGCCGGCTTCTTGAGTGGTTGCGGCAATGGTAATCGTACCGTCTTCGGCAATATTGA
TTTCCGTACCGGTTTCAGCGGTAATCGAACGGATGGTTTACCGCCCTTACCGATAACTT
CGCGGATTTTGTCTTGGTTGATTTTCATCGTGAACAAGCGTGGCGCGTGTGCGGACAGCT
CTTGCGGGCCGCAACGGCGGCTTTCATCTGATCCAAGATGTGCAGACGCGCTTCTTTGG
CCTGTGCCAAAGCGATTTGCATAATTTCTTTGGTAATGCCTTGGATTTTGATGTCCATTT
GCAGCGCGGTAACGCCCTTCGGTCGTACCGGCCACTTTAAAGTCCATATCGCCCAAGTGGT
CTTCGTGCCCCAAAATGTGCGTCAGGACGGCAAATTTGTTCCTTCCAGAATCAGACCCA
TCGCGATACCGGCAACGTGTGCTTTCAAAGGCACGCCGCGCAGACAGCAGGCTCAGGCAGC
CGCCGCGAGACGGAAGCCATAGAGGAAGAGCCGTTGGATTTCGGTAATTTCCGAGACCACGC
GCATGGTGTAGCTGAAATCTTCAGGTTTCGGCAATACGGCCAACAATGCACGTTTAGCCA
AACGGCCGTGACCGATTTACGGCGTTTCGGTGCGCCCATGCGGCCCACTTCGCCGGTAG
AGTACGGCGGAAAGTTGTAGTGCAGCATAAAGCGGTGCGTGTATTGCGCGGACAGCGGT
CGATGATTTGCTCGTGCAGCAAGTACCCAAAGTTGCAACGGCCAAAGCTTGGGTTTCGC
CACGGGTAAACAATGCAGAACCGTGCGTGCGGCAATACGCTGGTTTGGATGTTTCAGCG
GACGGACGGTGCGGGTGTGCGGCGCTCGATGCGCGGTTGGCCATCCAAAATTGGCTGC
GGACGACATCGGCTTCCAAGTGTGTTGAAAATGCCTTTGATTTGTTGGCTGCCAAAGTGT
CGGTTTCTTCGGTAATCAAGGCTTCTTTACCGCACTCCAAGCTTCGTCCAATTTGGCAG
AACCGCGTTGTTTTGACGGATTTGAAACGCTTCTTTAATGGTTTCGCCGGCAATCCCGC
GGACTTTGGCAACAGTTCTCATTGGTTTCAGGTGCTTTCCAATCCCAAAGTTCCGGAT
TGACTTCGTGCGCAAAATTCATTGATTGCATTGATGGCAACCTGCATTTGATCGTGCCGT
AAACCACCGCGCCAGCATCACGCTTCGGGCGAGATTTGGCTTCGGATTCCACCATCA
ACACGGCTTTTGAAGTACCGGCGACCACCAAGTCCAATTGCGATTTCCGAATTCGGCTT
TAGTCGGATTCAAAACGTACACGCCGTTTACATAACCGACGCGTGCCGCGCGGATCGGGC
CGGCAACGGTACGCCGCTCAACACCAGCGCGGAGATGCACCCAACATTGCAGGAATAT

CAGAATCGATTTCAGGATCGACGGACACGACCATCGCTACGATTGGATGTCGTGGTAGA
AACCTTCAGGGAACAGCGGACGAATCGGACGGTCGATCAGACGGCTGGTCAGGATTTCTT
TTTCGCTTTGTTGCCTTCGCGTTTGAAGAAACCGCCGGGAATTTGCTCGCGCGTAAG
5 TGGTGGTAACGGCAACCAAAACAACGGTGTGCGCCATAGAGACTTTAACGGCAGCGCGG
CTTGGCGGCAATTTGCGCGTTTCCAAAGTAACGGTCTGATTACCGTATTGGAAGGTCT
TAACGTGTTGTGTCGAACATATTGTTCTTTCAAATAACCGACTGCTAAAACACTAATA
ATGCACACTAAAATCCGAATGTGCATAGTTAGGGTTTACAGACCGTGCAGGTTATAAA
CAAGCTTTTACAGCGGCATTTGCGACGCTGAAAGCAATTGCGGATTATAAAGGCAACCATC
10 CTTAAATCCAGTATTGATACAATAAAAAGGCCGTCTGAACCATATTTCTTTACAGACGGC
CTTCAAATTAATAATCAATCCTGAGTCAGCAAAAGTCAATGCTTCCCGATACTTCTCGAC
AGTTTTCTGAATCACATCGGCAGGCACTTTGCGCGCAGGGGCTTTTTGTTCCAACCGCT
TTGTTCCAGCCAGTCGCGGACGAATTTGTTGTCAAAGACGGCGGATTGGTGCCGACTTT
GTATTGGTTCGCGAGGCCAAAACGGCTCGAATCGGGAGTCAATACCTCATCCATCAGCGT
15 CAGCGTACCGTTTTCTCAACAAACGAATTCAAATTTGGTATCGCAAATAATAATACCGCG
CGATTTGGCATATTCGCGCGCTTCGGTGTAAAGCCGAACCGCCTTGGCGCGCACTTCTTC
CGCCAATTTCTTGGCGATAATGCGTCCGCATTCTTCAAAGCTGATGTTTTATCGTGATC
GCCGACTGCGGCTTTGGTTGAGGGCGTAAAAATCACTTCAGGCAGTTGTTGCGCTTCTG
CATACTTCAGGCAGTTGAATACCGCAAACCGAGCCGGTTTTTGTATAATCTTTCCAACC
20 GCTGCTGCCAGTAACACCGCACAAATCGCCTCTACTTTCACCGGAGTGAGCTTTTAGC
CAGCAGCGGCGCTTTCTCTAAAGCTTTGGCTTCGTTTTACGGCAAAACATCGTAAACCGT
TTGACCGGTAAAGTGGTTGGGCATAATATGCGCCAGTTTTTTAAACCAAAAATTGGAAT
CTGCGTCAGAATCTCCCTTTGCTCGGAATCGGGTCGTCCAAATCACATCAAACGCGGA
CAGGCGGTGCGAAGCGACCATCAGCATACGTTTATCGTCGATTTATATAAATCGCGCAC
25 TTTTCCAAATAGATCTTTACCAAACCAATCTCACTCATTTGCGCCCCCTGAAATAT
CTTGAAAATACCGACCCGACCCGACAGGTTTGAATCACAACCGATATTCTAGCCGAA
TTCGCGCGCAAAACAATACCCATGGCACAAAAGCCAACCGTCAACCGTCGGCAAAATTT
GGCACTATAATACCGACAGCAAGTCTACAATACACTTTTACCAAAGGAAATACCTCAT
GAGAATCCTATTGACAGGCTCGAAAAGCCAACTGGCACGCTGCCTGCGCGACCGCTTCC
30 GGAAGACTGGGAAACCATTGCGACGGATTCCGCATCCCTAGACATTACCGATGCCGATGC
CGTCTGCAACATGGTCAAAGTTTCCAACCGACGCCATTGTCAACACGGCTGCCTATAC
TGCCGTCGACAAGGCGGAAGCGATGCGGCAGCGGCATTTGCCGTCAATGCTTCCGCCGT
TTACAACCTTGCTTGGCAGCACATCGCGCCCATGCCGATTCAATCCACATCTCAACCGA
35 CTATGCTTTGACGGTTAAAGGAAAAGACCTATCAGGAAAGCGACTTTACCAATCCTTC
CAATGTATACGGAATCCAAAACCGCAGGCGAGCTGCTCGCACTGTCTGCCAATCCCGA
CAGCCTTATCCTGCGGACTTCTTGGCTGTTTAGCGAATACGGGGACAACCTTATCCGCAC
GATGCTGAACCTTGCGCGGGAACGTTCCCCGCTGTCCGCCGTCCACAACCAATCGGCTG
CCCGACCTATGCCGGCGACTTGTCCGCCACCATCATCCGCTGTGTCAGCACTCCAATCC
CGTTCCGGGCATTTACCACTACGCCGGCAGCAAAATCCGTATCCTGGTACGAATTTGCCCA
40 ACATATTTTCAAGCGGCATCGCAACAGCAGACATCCTTCCCCGTTCCTGAATTGACTGC
CGTTTCAGACAAGGAATATCCGACCGCCGCCCCAGGCCGCATACAGCATTTTGGACTG
CCGCAAAATCGAAAACGACTTCGGCATCAAACCGTCAGACTGGCAAAAAGCCCTTGCACA
GGTCGTTTCCAAGCTGCTCTGATGCCGCCCGCCCCCTCTGTTTCCGCCGTCAAGCACCGCC
TTGGCGGTTTTCTTATATAGTGGATTAACAAAAACAGTACGGCGTTGCCTCGCCTTGCC
45 GTACTATTTGTAAGTGTCTGCGGCTTCGTGCGCTTGTCTGATTTTGTAAATCCACTATA
AAATCTACCGATTACACAAACACATATCATCTTACACAATCATGCTTCCATCAACAGTA
AAACATGATATGATTGCCAACAATAACATCTCACAATAAATTTCTAATTTTATTGAAA
AAATCAATAAATAAGAAATCCTCCCAACCGACAAATAAAATAAGAAAGGGTTAATATGCA
ACATCGAAGAAGACTAGCAATTTACCAAGCATCCAAACGTGCTTCTTTACGGCGAGGTC
50 ATCCGCCCGCAAAAACGTAAGAAGCTTGAATTTGAAAAAATGCGCGCTGAAGTCCTGC
TTCAGACGGCATTTTTTACCCTTTCAGAAACTGTTTCAACCTGTCTCATCCAAAACC
AGTGACAGATTTCTCATCTCCGCCAACAAAACGGGAACCGCTCATTGTATTTTCTT
CCAAAACAGGATTTTATCCACATCGACCACTTCCAGCCCGAACCGTATTCTATCTGAA
AAGGTTTGAGTTCGTGCGCATTTTGTGGCACAAGCTGCAATATTCACGAAACATCAAGG
55 TCAATTTATCCGCTTTCCTTATCTGTCAATTTGCACACGCCAAAGCCTTAGACGCAGC
AGAATCATGGTCTATTTGGGAAAAACAATGTTTTGAGGAAGATGATACTCAAGTCCTG
CCAAAACAGTAATAATGCCGTCTGAACAGTTCAGACGGCATTTGAAAACCGTTTTACG

CTTGAACGTTGATACCCGCCGTACCGTCGTTGCGCATTGTGCGCCGTCAGAAACGAAG
CGGCAAGCTCCCCGAGCAGCCGAGCAGCTCGCTACGCCCAATTGCGACTGCAAATCGC
CCATTGTGGTTCGCGCCGGCGGCGATGGTTTCCTTGATTGATGGTCGTAACGGCATTGC
AGATGCAGACAAACATTTTGTGCTCCGTGTGTTCTCAAACATATCGTACCGATAGCGGCTT
5 TTATTATCGTATGCGAATATAAATAAAACGGTTCGATTGCAAGGTCGGTATACACGGT
TTGTCTTGGTAATTTTTTATCAAGTTTGCATTTTCGATTGATTCTTATTAAACCAAAGT
AGAAGCCTCAGTTTCGGGAATGGTGTCTTCACTACACCCTGCAACCATACGTTGGCAA
CATGGGTATAAATCTGCGTCGTATTCAAATCGGCATGTCCCAACATATCCTGAACCACGC
GCAAATCCAAGCCGTGCCGCACCAGATGCGTGGCAAAGGCGTGGCGCAGGCTGTGCGGGC
10 TGATGTGCCCCGATGCCTGCCTGACTTGCAATTTCTTTGACAATCATCCATGCCAACTGAC
GGGAAATGCCCGTCTTTTTCTGACTGACAAACAATGCGTCGCAATTCCTGCCTTTCAGCA
GAAGTGGGCGTGCTCCGTATAATAGCGTTCCACCCAATACGCCGACTCCTGCCCATCG
GGACCATCCTCTGCTTATCACCTTTCCAGCGCGGTAATACAGCCCCGTGCCAAATCCA
CATTGCCGAAGTTGAGCCGACCGCTCGCTGACGCGCAAGCCGTCGCGTACATCAATT
15 CGAGCAAAGCCTTGTCGCCGAAACCGTGGCGGTGTCGGTATCCGGGGCGGCAAGCAGTC
GGGAAATCTGCTGCTCGGTGATCAGGGTCGGAATATTCTTGTCGATTTTGGGCGGTTTCA
GCAAACGGGTGGGATTGTCCGTCTTATGCCTTCACGCTCCATCCATATATACAGGCGTT
TGATGCCGATAATGCGCGCGCTGCGAATCCGTTGCTCTCCGTCAACATAAACC GCCG
CCGCCAAATCCGCTTCGTCCGCATCCTTCAGCATTCTGCCGATTGGGACAGGCGGCGGG
20 CGATTTTTTCAAATCGCGCCGTAACCGTTAAAGTATTCTGACTGAGCCGCCTGTCCA
ACCACAGCGTTTCAAGCAGCTGTGATCAAACCTTCTTCCATACCGTTCCAAACAAATG
CCGTCTGAATCTTCTTCAGACGGCATGGTTCACATTATCGGGAAGCGTTTCCAATACTT
CCTGCGCGTGACCCGCCACTTTGACTTTCCGCCATTATGGGCGATTCTCCATCCTTAT
TCAAGACGAACGTACTGCGCTCGATACCTAACGACTCTTCCCGTACAGTTTCTTCAATT
25 TGATGACATCAAACAGGCGGCACACTGTTTATCCTTGTGCTCAACAGCTCGAACCGGA
AACCTTGCCTTGCGCGCAAAATTTCTGATGCGCTTTACGCCGTGCGGGGAAATACCGACCA
CGGTATAACCCAATGCCTCAAACGTTCCAAACGCGCATTGAAATCCAAGCCTTCCGTG
TACAGCCCAGCGTACTGTCTTTCGATAAAAAATACAGACCAAAGGCAGATGTTCTGCCG
AATGAAATCCGCACCGCTGCTCGAAGGCAGGGTAAATTATATTTACATCCATAGTCC
30 TACTCCCGATATTCCCATTTATCAAACGCGCAGCAGACGACCGCCGCAATTGCCAAAC
CAACCCCGATTCTACCGCCCCAAAGGACAAGGATTCAACCGCCGGAAACATCCAAACCGA
CACACGACGGCATGAAAAATATCCATGTCAAACCAAAATATGTTCCGATTAAAAACA
GAATGTTATAAAACCCAATCCCCAAACACAACAAGACCGCCCGCTACGGGCAGTCTCC
TGTCAGACGACATACTTTACAGATGGCTGTTTTTCAACAAAATAACGCCAATACTCAA
35 AATATGGAATCAAAAATGTCCATCCATACTGAAACGCCTGCCCTCATCGCTGCTGCTC
GGTCTCTGCCCTTCCCTGCGTCAGCCACCTTTTGGCGACAACGACATTTTAGGGCAA
TTTTTAGAACAGAACATGCTTACCTCCTCCGATCCGATAGAAATATTCGCCGAAAGCACG
ATACACCCCAACACCCAGCCATTACAGGCGGTCTGATTCTCTCCTCAGCTCTGCC
CTGGTCGTCAACAACAAAACCGACAGATACTGTATCAGAAAACGCCGACAGGATTATG
40 CCCATCGCCTCCATTTCAAACCTGATGAGCGCGATGGTCGTTTTGGATGCAAACCTGGAC
ATGAACGAACCGTTACCATTACGCCCCAGCAATCGACCGCATCAAAGGGACCGGCAGC
CGTCTTGCCATAGGTACGGCACTTACACGCAAAAACTGCTGCACCTGAGCCTGATGAGC
AGCGAAAACCGCGCCACCCATGCATTGGGCAGAACCTACCCGGCGGCATGGGCGCATTT
GTGCGCGCCATGAACCGCAAAGCCCAAGCCTCGGTATGTACGGCAGCCGCTTTTACGAA
45 CCGACCGGACTCAACTTCAAACGTTTCTACCGCCAAAGACCTGAGCCTTATGGTCAAC
GCCGCCGCCAATATCCGCAATCCGCACCACTCGACTTCCAACCTACGCCTCGGTACAG
ACCAAAAACGGGCAGCAGAACTACAAAACCTCAATGCCCTGGTCAGAGAAGGCATGTGG
AACATCGAATTGCAGAAAACCGGTACATACGCGAAGCAGGCAGGTCTATGGTTGTCAA
GCCAACATTCAAACCAACCCGTTACCATCGTATTGCTGAACTCGCCACATCCGCCACA
50 CGCGTCAACGACGCCCGCAAATCGAATCGTGGATGCTGCAGCAACGCTCCTGACATACA
AATGCCCGGCGGAAACCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 295>:

-718-

GNMCW06F gnm_295

CGTTTCTTCCAGTGCAGCTATTGATTTAGTTATTAATCGTTCACTTCCGGATATGGCGGA
TGTTTATTGGGCATTAGGTTTGGGGATAGAAGCCGAACGTATCCACAATGAGCAAGCAGT
AAATAATCCGAACGGTAGCGAAAGGGATAATAGAAAGCAGTTAATATCTGCTTTAGATAA
5 AGGATTTGATGGATCTTTTAAAGAGAAGCATTCTTTTACTTTTTTACAATCTGTGATGATGGA
TGTAACAAAGTTAGGTGTTGAATATACAATAGATGGTTGGCAAAAAATTGGAGGTTGGGG
TAATGGGATAATCAATGATTTATATAAAAGTGTGTAAAAAGAGAGTGGACTGGAATATT
TGAGATCGTTAATAATAACATCAAGCAAGGAAATGAAGCTTTAAAAATGAAATCAATAGC
TGTTTCTGGATATGAAAGCTGCTGGGCAAGGAATTGGAGATGACTTAAATACACCGTGG
10 AATAATCTCACTCAGGCTGCCGAAATAATCTATAATGACATAGTAGACCATACTAGTCAG
GAATAGAAAAAGGTGTCAAAGCCATTAAAGAATTGTCnGAAAAAATGAAAAATGCTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 296>:

GNMCW14F gnm_296

CCGATCCGACCACGCCCCGCGGATTCTTCAAACGGTTTCCCGCGTTCTTCCCAATTAT
CGTACATTAGGTTCTGCTACGGTTTTCGCCCCAATGTGGCAACTTGGCGCCCTGTCCGAA
TGTTGCTGCGCGCTTTGCTGAACCTCTGCCCCTTGGCTTTCTTCTTTGTATGGGTAAAC
GGCAAGCCGTTTTTTACATAGTCCTTGGCACATCAACTCCGTCACCTCTTTCAATGCCGT
CCCTTGATGCGAATAGCAGGGCGCATCCGGTTCTTCCGCTTCTATACAGCCTGCTATAT
20 ATTCAAAGGTTCTTACCTGCCTTACACCGTTATAAATCGGCTTGCTTCGGGTTTTTCGGA
CAATGTCGGAAACAAACATATCTGCGGTAAGGTGCCGTTATTTACCGGGCTCGCCTTCTG
TTTTATCCGGAAGTACTGCCTGCTGTTCTGTTGCCGCCGATTCTTGCTGCGGGGTTCT
TCCGTTTTTTTCCGTAACGGCTCAACATTTTATAGGACAGGCCGACAAACACGGGAATCA
GCAATAACTATTACGGCAGAGTGTAAT

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 297>:

GNMCX02F gnm_297

GGCCAGTGCCAACAGTGCCAAGCTTGCATGCCTGCAGGTGCACTCTAGAGGATCCCCGGC
GACCAATTTGGGTTTTGAATAAAGGCGGTGCGATTTTGGTGGAGATGGACAGCGCAATCGG
30 GGAATCATCAGTTCGCCTATCGTGATGGCGAGGACGATCAGTCGAAAAACGGAAATAG
ATAACGCGGGAACCGGAGGAAATAAAGGGGACGAATCCCAAAAACGACGCGCCGGTAACAA
ATACCGCCATAGCGAATTTACAGCGGGGTTTTGGGCTGTTTGCGCCCCATTTTGTCCACA
TTGCCGCCATCAGTCCGGAACAGGATGACCCACAGGCTTTGCATAGAATCTTTCCAAG
CGACGGGCACGGTAAACGAACCGATGGTGCGGTTGACGGTTTCGTGAAATAGACGGTTG
35 CCACGGTGTAATCTGAAACCAGACGGCCCAAAACATACAGATGGTCAGGAAAAGCGGGA
TGTAGGCGATGATGTGCCGTTTGTGTGCGGAAGTACGCGGGGGTTGGTCAGCAGGCGGG
CGAAATAGGCGATGACGGCAAGGATGACGGTAGATAATAGGATGCCGGAGAAATTGTCGA
GGTTGACAAGCCCGGTTTTGATGGCGGTTGCAAGTGCGGCGATGAGGGCGATGCCGACGG
CGGCCGCAAGTTTTGCCCTGTCTTTTGAAGCGGATGGGGGACGGTGGGGTGGGGCAAGT
40 TTTTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 298>:

gnm_298

CCTTCCTCGGCTTCCTCAAAGGCGTAGATTTTCATGTGGACGGTCAAACATATCCGACACC
45 AGCAACCCCGTCCGTCCGAACGCAAGCGCAAAGGCATCATGCACCGCCAACGCAACCGC

5 AGCGTCAAAAACACCCAGTCCCGCAAACAGAGCCGCATAAGGATATTTCTCGTTCACAAAC
ATCGCCGTCCCCCTCTCCGAAGCAGACCGCATTATATAGCGGATTAACAAAATCAGGA
CAAGGCGACGAAGCCGACAGTACAAATAGTACGGAACCGATTCACTTGGTGCTTGAG
CACCTTAGAGAATCGTTCTCTTTGAGCTAAGGCGAGGCAACGCCGTACTGGTTTTTGTTA
10 ATCCACTATACCGCGCACTGCCTTGCCGCCCGCCGAAAAGTTGCACAAACAACCGTTCA
TATATATCATGACGAAAAAACGCCGTGTAGCTCAGTCGGTAGAGCAGCGCATTTCGTAAC
GCGAAGGTGCGGGGTTTCGATTCCCTTCTCCGGCACCAATACCAAGCACAGACCCTCCCTT
CCTCGGGAAGCCTGTGCTTTTTCACATTCCGCTTCAGACGGCACAACCGATATGAACAC
CTCGCAACGCAACCGCCTCGTCAGCCGCTGGCTCAACTCCTACGAACGCTACCGCTACCG
15 CCGCCTCATCCACGCCTGTCGGCTCGGGGGGCGCTCCTGTTGCCACCGCCTCCGCCCG
GCTGCTCCACCTCCAACACGGCGAGTGGATAGGGATGACCGTCTTCTGCGACTTGGCAT
GCTCCAATTGCAAGGGCGATTACTCCAAGGCGGCGGAACG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 299>:

15 **gnm_299**

ACTTGCATGCCTGCAGGTGCGACTCTAGAGGATCCCGTTACAAAAGATCATTAAAAAATC
TTTCAGGAAAATGAAAAAGAGATCCTGAAAAACATTGATAGAATTGAACGGATTCAAAG
TTAATTATTGGTCAAGTTATGCATAAGACCAATAATCGAGCAAACCCCAACAAGTTTTT
20 ATAATTGTTGAAAATATGCTTCATGAAGTTCGGGAAAGAGATAGCTAAAAAATCAAAT
TATTTATCGCTATATAATCCTTAAATTCAAAGCTTTGAATGACCTGCTAACACCCGTAT
CTTCTCAGAACGCCAACTAGAAATCCGTTTCAACTCCTCGGTACCGAGCTCGAATTCGT
AATCATGGTCATAGCTGTTTCCTGTGTGAAATTGTTATCCGCTCACAATCCACACAACA
TACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCTAATGAGTGAGCTAACTCACAT
TAATTGCGTTGCGCTCACTGCCCCTTTCCAGTCGGGAAACCTGTGCGTCCAGCTGCATT
25 AATGAATCGGCCAACGCGCGGGGAGAGGCGGTTTGCCTATTGGGCGCTCTTCCGCTTCCT
CGCTCACTGACTCGCTGCGCTCGGTTCGCTGCGGCGAGCGGTATCAGCTCACTCAA
AGGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGAACATGTGAGCAA
AAGGCCAG

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 300>:

GNMCY27F gnm_300

CCAGTTTCGATCTTGATTCTGTGATACCGAAGCCCCGCTCCCGCCAAAATATCAAGA
TGTTTTTCCGAAAACCGCAAGCCCGGTACGAGCTCGAATTCGTAATCATGGTCATAG
CTGTTTCCTGAGTGAAATTGTTATCCGCTCACAATCCACACAACATACGAGCCGGAAGC
35 ATAAAGTGTAAGCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGC
TCACTGCCCGCTTTCCAGTCGGGAAACCTGTGTCGTCAGCTGCATTAATGAATCGGCCAA
CGCGCGGGGAGAGGCGGTTTGCGTATTGGGCGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 301>:

40 **gnm_301**

GGATGCGGATGCGCTGAACATATTATCAACCGATGCCGAAACCCGAAATCTGGCGCGCGG
GTGTA AAAACCTGATTTTAACGCCACACCCCGCCGAAGCCGCGCGCTGCTTGGAACGAC
GGTTGCGCAGGTTTCAGGCGGATCGGACGGCGGCACTGAGGAAGATAGGGGCAATTTTCGG
CGCAACCGTGGTTTTAAAGGGGCACAAAACATTGGTTGCCTCACCCGATACGGAAATCTA
45 TGTCAACGAAAGCGGCAACGCGGATTGGCAACGCGGGCAGTGGCGACGTATTGGGCGG
CATCATCGGCAGTCTGCTCGCACAGGGCGTGCCGTTTTTGAAGCCGCCTGCGCGGGCGC

GTGGCTGCACGGCGCGGCGGGCGGATGTCATAAAGAATCGGCAGGCATTGCGGCAGGGCT
GTTGGCAGGGGAAATCGCTCCGGCGGCAAGGTGGCTGCGCAACCGGATAACTAAAAGTAT
GTAAGAAGATATAGTGGATTACAAAAACCAGTACATCGTTGCCTCGCCTTAGCTCAAAG
5 AGAACGATTCTCTAAGGTGCTGAAGCACCAGTGAATCGGTTCCGTACTATTTGTACTGT
CTGCGGCTTCGTGCGCTTGTCTGATTTTTGTAAATCCACTATACCATAACAACCACGCCG
GAATTAAGTTTAAATTTGAATAAAAGGTTCCGGTCTGCAAAATACAGAACCCGAACCTT
GTTCCGATATTGAAACCGGCTGCCGATTTTGGGCGGTGCGGCTTGAAGTATCAAGATT
CGCATATGCCGTCTGAAGCTCGGAGAGGTTACAGACGGCATATGCTTATTTGGGCTGCTCT
10 TCAACGAATCTCGGACCTTTCAAGATGCCGTTGTGAGAATArGGCGACAGCAGGTTGTAT
GCsGCGGTTTTGGAAACCTGATAACCGCGGTCCGGTCAGGCTGTTGGCAATCTGATTGACC
ACTGCGCTGACCAAAGCCCCAACAGGCCGCTGTTGCTGTTGTTGCTGCCTTCGCGGATG
CTGGCCGAACCCGACCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 302>:

15 **GNMCZ04F gnm_302**

GACGGCCAGCAACATATACGACGGCCAGTGCCAAGCTTGCATGCCTGCAGGTGCACTCTA
GAGGATCCCCGCGGCGAATAAGGGCAAATGTCAGGACGGCGCGATCGGTGCGGCTGTGGG
TGAGATTGTCGGGGAGGCTTTGGTTAAAAATACCGATTTTAGCGATATGACCCCGGAACA
20 ATTAGATCTGGAAGTTAAGAAAATTACCGCTATGCCAACTTGCGGCAGGTACAGTTGC
AGGCGTAACGGGAGGAGATGTCAATACTGCTGCACAAACCGCACAAAACGCGGTAGAAAA
TAATGCGGTTAAAGCTGTTGTAAGTCTGTCAAAAGTGGTTTATAAGGTAGCCAGAAAAGG
ATTAACAAACGGGAAATCAACGTTAGAGATTTAAACAGACGTTGAAAGACGAAGGTTA
TAATTTAGCCGACAACCTGACCACCTTATTCGACGAAACATTGGATTGGAACGATGCCAA
AGCCGTTATTGATATTGTCGTCGGAACAGAGCTGAATCGCGCTAATAAAGGGGAAGCGGC
25 ACAAAGGTCAGGAAGTTTTAGAAAAATCGTCCTATAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 303>:

GNMCZ23F gnm_303

CCGCATTGAAAGCGGAGACTTATTTTTGTGCGCCTTACCATTCTTGGGAGAAAGGGCTGA
30 ATGAGAACACCAACGGACTCATCCGGCAATACTTCCCCAAACAAACCGATTTCCGTAACA
TCAGTGATCGGGAGATACGCAGGGTTCAAGATGAGTTGAACCACCGACCAAGAAAAACAC
TTGGCTACGAAACGCCAAGTGTTTTATTCTTGAATCTGTTCCAACCACTAATACACTAGT
GTTGCACTTGAAATCCGAATCCAAGGCCGTCTGAAACGATAAGGTTTCAGACGGCATTTT
TTCTTTTATAGTGGAGAACTTTGGCATTTTTTTTTGGCTCGCTTAGCTTGATGATACGAT
35 TCTCTAAGGTGCTGTAGCACAAGTGAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 304>:

GNMCZ29TR gnm_304

TCTGCGGCTCGACGCCTTGTCTGATTTAAATTTAATCACTATATTTTCATATGCTTATT
40 TATCTAACTTTTCCCGGTAACAAGGTAACAACCTAAGGGTATCGCTTCCTAGTATAGGTT
TTTTCCAAAAACCCAAAAAAACCGCCTGCATCTTGACGGTTTTCCCCCTTGTTCCCTA
CGTCTTGGCAGTATCCCCGCAAGCTCTTTCCGCTTGGCATTCCTGATTTGGCGGTGCT
TCAGCTTTATTTTTCGGTATTTTTTCGAGGTATTTTCAGATACCGCAAAAGATATCGT
AAATTTTAGGTTTACTTCAATTAGGGCGGATTGGACGGGATTGCACTGTCAGGAAGGGGA
45 CGGCACGATAACAATCAGCCTGAAATCCTTGATTGATTGCAATTGGTTGACAGCGTTGG
ATGGGATTGAACAAAAACGCCTGAAATTTTCAGGCGTTTTTGTCTGTTGGTGCCGACAG

CGAGATTTGAACTCGCACAGCCTACGGCCACTACCCCTCAAGATAACGTGTCTACCAA
TTCACCATGTCCGCATTTGAAAACTGTTATTTCTGCTGCTGACGAACAAGGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 305>:

5 **GNMCZ50F gnm_305**

CGGCCAGTGCCAAGCTTGCATGCCAGTGCGAAGCTTGCATGCCTGCAGGTCGACTCTAGA
GGATCCCCCAGACGCAGGTACAGATTAGGCGGTGTGCCGTAATCGTACGAATGCCGATTC
AACCTAAGCAGACATCAGTATTTAGGAAGTGGATGTTTGATGGAGCAAAGGTTGTACGAA
GGGTGGAAGGCAACCTGTGGGTGTTGGTATGGTCGCGCTGAAAAAACGTGTTTTAAGG
10 GACAAATGCCGTCTGAAAATCGGTTTCAGACGGCATTCTGTTTATTTAAAGCAAACAG
GAAAAGGCAGCAATATTCTGCAGTCTTCCATTACACAAGCGTTTTATAGTTAATTAA
AACAGATAGTACAATACTCACTTTGAAGGTCTAACCATGGCATACTCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 306>:

15 **GNMCZ56F gnm_306**

GACGGCCAGCTAGGAAACGACGGCCAGTGCCAAGCTTGCATGCCTGCAGGTCGACTCTAG
AGGATCCCCGTCCGTATTGGTTGCAACACCTTTGCCGGCACAGTCGGGAAATGCTGTTG
GATTCACGGCAGCAGAAATGAAGTTCGGGGACAGTAAGAATTTCTCAAATAGAGAATC
TCAAATACCCGTGCGAAGTTATGGTAACGGTTGAAATGACTTCGACAGGTAAGGGCATGG
20 TTCCTTCATTAATTGATTTTCAGGTGGCAGAAAAGCCGAAAGGTTGATTTATGAAATTTG
AAGAACGTTTCATAGTTCAAGACTTGGAACGCATGACTTTATTTATCCCGATCCTTTTCG
GTGATGTGGGTTTACTCAAATATTAAATCAGCAGGTCAATTTGAAAGCTACGAAGATG
CGTTGAATTCAGGCATAAATGAAATAGGCGGAGGATTCCAGATATTTAGTTCTTCGTAA
AATCGGAATAAAAGAAAACAGGCTCGGCGGGCGGTCTGTCAACCTTTCACAAAGCCCGC
25 AACAAAGGAAAAATA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 307>:

GNMDA71TF gnm_307

CCCCTCCGACCGGGAAGCCTGTGATTTTTATTTCCAGGCGTATATATGCGGGATGAAAT
30 GGTAGTTGGGGCGGAGGGCGCGTTTTGTATGTCCGGCGACATCGCCAGTACAGCCGCAA
CATCCAAGCCGGTATTGCCTTTATTGTCCGAAAGGCGGAACACCGCCGCTCAGGGTGGT
CGCATCGGGCAGCAGGGCGGAGGTTTCAGACGGCATTGCCTGCGAGGAAAAGCTGGCGGA
ACTGCTGTGCGAATCGGTCTGCGTATTCCGCCGCTGCGTATGCAGCATGAAGACATTCC
CTTCCTGATACAGGGGATTGCCTGCAATGTGGCGGAAAGCCAAAAGATTGCGCCTGCCTC
35 ATTCAGTGAAGAGGCATTGCCGCATTGACCCGTTACGACTGGCCGGGAAATTCGACCA
ACTGCAAAGCGTCGTTGCAACGCTGTTGTTGGAGGCGGACGGACAGGAAATCGGCGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 308>:

GNMDB47TR gnm_308

40 CTGGTCGGGGGAAGTCCACTTGTGTTAAACATTTCAACAGGTAGCCTAAAACCTGAAACTG
GTACAGTTAGTATTAATGGGCATGATATATCAAGTTTCTCCATCCTTTATTAGGGGAT
TGAGCGGGATTGTTCCGCAAGATGATGTCCTTTATGCAGGAAGTATTGGCGACAATAAGC
CATAACGCGTGATTTACCAACCTGTTACCATTGAGCCGCGGAGATCACGCCGCGTATCG

TCCGTGAGGAGAACTACGGTGGCCAATAAATTAAGAACTACACCATCAACTTCGGCCCCG
CAACACCCTGCGGCGCACGGCGTATTGCGTATGATTTTGGAGCTGGACGGCGAACAATC
GTCCGTGCCGACCCGCATATCGGCCTCTTGACCGAGGTACCGAAAACTGGGGGAAACC
5 AAAACCTATCTGCAAGCCCTGCCCTATATGGACCGCTTGGACTATGTTTCCATGATGGTC
AATGAGCAAGCGTATTGTTTGGCAGTAGAAAACTTGTGCGGTATCGATGTGCCCATCCGC
GCCAATACATCCGCGTATGTTTGGCGAAGTAACGCGCATCCTCAATCACTTGATGGGC
ATCGGTTTCGATGCCTTCGACATCGGCGCGATGACCGCCATTCTTTACGCCTTCGCGGAC
CGCGAAGAGCTGATGGACCTGTACGAAACCGT

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 309>:

GNMDB48TR gmm_309

CTGGTCGGGGGAAGTCCACTTTGTTAAACATTTCACAGGTAGCCTAAAACCTGAAACTG
GTACAGTTAGTATTAATGGGCATGATATATATCAAGTTTCTCCATCCTTTATTAGGGGAT
TGAGCGGGATTGTTCCGCAAGATGATGTCCTTTTGCAGGTTCTATTGGGGAAAATATTT
15 CATTTTTTGATGAAAGCCCAATATGGAGCTCATTGAACAATGTGCAAAAATGGCACAAA
TACATGACGATATACTTAAAAATGCCAATGGGCTATGAGACCTTGATTGGCGATATGGGAA
ATATCTTATCAGGTGGACAGAGGCTTGAGAGTTATTTTGGAGCTGGACGGCGAACAATC
GTCCGTGCCGACCCGCATATCGGCCTCTTGACCGAGGTACCGAAAACTGGCGGAAACC
AAAACCTATCTGCAAGCCCTGCCCTATATGGACCGCTTGGACTATGTTTCCATGATGGTC
20 AATGAGCAGGCGTATTGTTTGGCAGTAGAAAACTTGTGCGGTATCGATGTGCCCATCCGC
GCCAATACATCCGCGTATGTTTGGCGAAGTAACGCGCATTCCTGTCACTTGATGGGC
ATCGGTTCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 310>:

25 gmm_310

TGCCGTGCTGCTGAAGGGCGCGGACGTGTTCAATACGGGGAATGCGCGTTATGTGCTGA
CGGCTATGTGTATGCCCTTTCGGCGGTGTCGTGCGTCATCGGGCTGGTGGGGCGGTTCA
GGCTTCAGACGGCATCGGGCAGGGCGGCAAGTCAGGGGGTGCGGGCAAGGCGGACGGAT
AGGACGCATTTTTTTCAGCGGGTGCCTCGAGAAGCAGCCGATGTGTTTGGCAGCCGCAGCTT
30 GGGGGGTGTAGTGCTAATGCGGGTTTCTTTGCTTTTATAGTGGATTACAAAAACCAGTA
CTGCGTTGCCTCGCCTTAmCTCAAAGAGAACGATTCTCTAAGGTGCTGAAGCACCAAGTG
AATCGGTTCCGTACTATTGTACTGTCTGCGGCTTCGTGCGCTTGTCTGATTTTTGTTA
ATCCATATACCATAACAACACGCCGGAATTAAGTTTAAATTTGAATAAAAGGTTTCGGGT
TCTGCAAAATACAGAACCCGAACCTTGTTCCGATATTGAAACCGGCTGCCGATTTTGGG
35 CGGTGCGGCTTGCAAGTATCAAGATTTCGCATATGCCGTCTGAAGCTCGGAGAGGTTTCA
CGGCATATGCTTATTTGGGCTGCTCTTCAACGAATCTCGGACCTTTCAAGATGCCGTTGT
GAGAATAGGGCGACAGCAGGTTGTATGCGGCGGTTTTGGAAACCTGATAACCGCGGTCGG
TCAGGCTGTTGGCAATCTGATTGACCACTGCGCTGACCAAAGCCCCAACAGGCCGCTGT
TGCTGTTGTTGCTGCCCTTCGGGATGCTGGCCGAACCCGACCACAACTCTTTCCGTTGC
40 GGAATCGACGACCGTGCTTTGGCGGATACGGTCGTACGCTGTCTAAAATTTGATATG
AAGTGCCGTATTCGGTAACCGTAATGTACAAAACCGCATCATTGCCGAAAATCTGATGCA
GTTTTTCCGGCCGGACGGCGTGAATATCGGCGGCATTGGTCAAGCCGTTTTGTTTGAAGG
TTTCTCCACGACTGCGGCGGGGAAGACGTAATAGCCGGCTTCGGAAAGCGGCGCGGCGG
TCGAAGCCAGTACACCCATGTTCCGTTGACATCGGGCGATTCTGTTAGCGGCGGGAACCA
45 CCAAAATTGAAGCCGGTTTGCTTTTCCTTGAATGACGTGTAGTCGAAATCGGGCGCTTTT
GAACTTGGCAGGCAGACAGCGCAACACGGCGGCAAGCCCTAAAAATCAAAGGTTTCATCG
CTTGCCCTCCTTTACCGGTTTTCATCAGGAAGTCCATAAATACGCCCGATTTCGGGAAACAG
CCTTTTCTCTTCTTCAAACCTGGCGGAACGCGCCCTCTTTGTCTCCCGAACGGGAAAGCAG
CAGTCCAGATGGGCGTGCGCACCCGGGGCGGCATTCAATTTTTTTGTTGCCGGCTTCCAC
50 AAAGTATTTTTTCATCTTTTCGGTCTGCTTGCCCAACGAAGTGTGCTGTTTTTCAAACC

5 TTCATAGACGGTATCGGGATAGCCGCCGTAATAACAGGGATTTTGGCCGTTGCCGCC
GCAGGCGGTTCAGAGCCAAGACCGCCGACACAGCGACAAACGGCTCAAGGTTTTCGGATT
CATCATTCTCCTTAACGGTTGGGTGGCCATGCGCCGTTGTCAACAGCCTGAACCAGGCT
GTTGACGGCTTCGCGGATTGCCAAGTCTAAACTTTGCCGTTCAAAGTCGCATCGTAGCC
10 GGAAGTGGCGCCGAAACCGATGATTTACGGTTGGAAAGTCGTATTGCCCCGCCCTG
TGCGGAATAGACGATTTCCGAAGTATTGACGTTGACGATATTCAGAGCCACTTTTGCGATA
GGCGATTTCGATTGTCGCGGACCCAAATGCCGAAGAGCTGATGATCGCCGACATCTCT
CGCTCCGAATTTCGTTACATGCGCGGTAAACGACATAATCTGCGCCTTTCAGGTTATGCGC
15 TTTGCCCGAAATGCCGATTCTGTTTTTAATGCGTTCAAATGGTGCGGTTTCAGTACGTT
GAAGCGGTTGGTCTGTTGACGGTGCGTTACTAGAATGGTTTTTGCTGGCTGCCCAAACG
GTCTTCCCCGTCGGAGAAAATGCCTTTTTGGAAGCTGGAGCGGTTGTCGAATGTTCCGAC
GGAAATCGGGGTACGAACACCGTGATATTGCGTATTGTAGGAGGCGACTTTCTCTACCTC
GAGACTGCGTGAGGATTCGGTCGCACAGCCGGTCAGTGAACGGCAGCGGCGGCAAGGAC
AACGGCGGTGGAAACGGTTTTCATAAATTTACCCTAAGGTCAAGTTAAGGAAATAACGG
15 GGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 311>:

GNMDE39F gnm_311

20 CGTATTGCGCACCGTCCCCAAAGTCTCCGGCGTCTGCGAAGCGTCAAAAAGATATTCCC
GACAGCGGGTCCCGTCTGACCGGCGGAGAAAACAATATCGGCTTCGCACAAAGCAAACG
CTTGCGGAACTCGGCGTCAAGTCCGCATAAGCCGCGTGTTCAGACGGCATGGCGTTCAG
ATGCCGTCTGAACACTTTGCCTGTATAATCCGCATCTTTACTGTCCAACCTTCGCGGTTCC
CAAACCTCCCGCGTTACCAAACTAGGGTTCGATATGTCAAACCAACAAGCCTTGGTCAT
25 CTTTTCGGGCGGTTCAGGATTTCGACCACCTGCCTGATTTCAGGCAATCAAACCTACGGGCG
CGAAAACGTCCAAGCCATTACTATCCAATACGGGCAACGCATGCCGTGAGCTGGAACGT
GCCGCTGGATTGCGCAGGATTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 312>:

gnm_312

30 GAATATCCAATAAGACAATATGTTCTTTTGAAAAATACTTTGGwT TTTTCGCCGAAAAC
AGGACGGTTCAGTTGCGGAAATGTTTGCAATTCTTTAAAAGCAGCGCGGAGGTCACA
ATGAAATGTCCGAATGGGATGTGGCGGGCGGCAGAAATCATCAATGCTGCCGACTGCCA
TACTTCTGAAATCTACAAAATGATGCATCGATCAAACAATATACCGCTTTAAAAAAACCG
35 ATGCCGTCTGAAACGCTTTCGGGGTTTCAGACGGCATCAAAGGGTACGGTCAGCGGATG
ATGCCGCGCGCGATTGTGCGAAAAGTCTCGGAATACGGCAAGCTCGGCTTGGGTTTCG
GCGCGGCGGAGAATGTCTGCCTTGGCTTCTTCAAACGGAATGCCGCGATGGTAGAGGGTT
TTGTACAGCTCTTTGACGGCGGAAATCTGCTCTGCGGTAAAACCGTTGCGGCGCATGCCT
TCGCTGTTGAGCCCCGCCGTTTCGGCGCGTAGCCCGATGCCATAAAGTAGGGCGGCACG
TCTTTGTGTACGCTGCGGCAACGCGGTCATGGCGTAGTCGCCGATGCGGCAGAATTGG
40 aAAACAGCGTGTAGCCGCCCAAACGACGTAGTCGCCGATGGTAACGTGTCCGGCAAGC
GAGGCGTTGTTGGCGAAAATGGTGTGGTTGCCGATGAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 313>:

gnm_313

45 TTATAACATAACAAAATCTTTAACCACACCGACAAAGGCTGCACCATGAAGAAAACATT
GACACTGCTCGCCGTTTCCGCCCTATTTGCCACATCCGCCACGCCACCGCGTCTGGGT

CGAAACCGCCACACGCACGGCGGCGAATACCTTAAAGCCGACTTGGGCTACGGCGAATT
TCCCGAAGCTCGAACCCATCGCCAAAGACCGCCTGCACATCTTCAGCAAACCGATGCAGCT
GGTTACCGAAAAAGGCAAGGAAAACATGATTCACACGCGGCACATACAACCTACCAGTACCG
5 AAGCAACCGTCCCGTTAAGGACGGCAGTTACCTCGTCATCGCCGAATATCAGCCTACTTT
CTGGTCAAAAAACAAAGCAGGCTGGAACAGGCGGGCATCAAAGAAATGCCTGACGCAAG
GTATTGCGAACAAACCCGAATGTTGCGCAAAAAACATCGTCAACGTCGGACACGAAAGCGC
GGACACCGCCATCATCACCAAACCGGTGCGACAAAACCTTGGAAATCGTCCCGCTGGACAA
TCCCGCCAACATTACGTAGGCGAACGCTTCAAAGTCCGCGTTCTGTTCCGTGGCGAACC
GCTGCCCAATGCCACCGTTACCGCCACCTTTGACGGCTTCGACACCAGCGACCGCAGCAA
10 AACGCACAAAACCGAAGCACAGGCTTTCTCCGACAGCACAGACGACAAAGGCGAAGTGGA
CATCATCCCTTTCGCGCAAGGCTTCTGGAAAGCCAATGTCGAACACAAAACCGACTTCCC
CGATCAAAGCGTGTGCCAAAAACAGGCGAACTACTCGACTTTAACCTTCAAATCGGTCA
TTGCGACCATTAATCCCGCCCGCACAAAAATGCCGTCTGAAGGCTTCAGACGGCATT
15 TGTTCAAACATCAATACCAACCGCGAGTTTCATCGCTTTTTCAACACGGCGGATACCTCA
TCATGTAAGACGCGGTTTCGCAATCGACATCATACTCTTGCGCCAAGTTCCATATATCGC
GGAACGCGCGTTCGACGAGCAGCGTTTCTTTCTCTTGAACCTCGTCAAACCTCCCAATAAT
AGCCTTGCAGGTTTTGCACCCACTCGAAATAGGAAACGACCACGCGCGCGAGTTCGCCA
GAATATCAGGCACGACCAATACGCGGTTTTGACGCAGGATCAGTTCGGCTTCGGGCGTAG
TCGGGCGGTTTCGCGCCTTCGACTACGATTTTCGCGCGGACTTTACCGGCGTTTTTCGGAAG
20 TCAGTTGGTTTTCCAGCGCGCAAGGGGCGAGTACGTCCACATCCAAAGCCAAAAGTTCGG
CGTTGGTAATTTCTTTGCCGTAACCGGCTTCGTTGGTGATGAAGCCTTTTTCTTGGAACT
CTTTAAACAAAGCTTCCATATCCAAACCGTTTTCTGTTGTAATGGCAACGTCAACAGTAG
AAACCGCAACAACCTTTTCGCGCGGATTGATGCGCGTAATAACCTGTGTGGTAACCCACAT
TACCGAAACCTTGAATGGCGTAAGTGGCACCTTCACGTCTTGGCCAGTTTTTCCAAAG
25 CTTGGACGCGCGGCGAGGTTTCACGCGGTAACCGGTAGCCTCGGTACGCGCCAAAGAGCCGC
CGAAGTCAACCGGTTTTCCGGTAAATACGCGCGGCGCGGAATGTTTACCACGTTTTTCAT
AAGCATCCACCATCCACGACATAATTTGCCGTTGGTATTCACATCGGGGCGGGAATAT
CGATTTTCTCGCCAATCAGCGGGGCAATCGCTTCAGCATAAGCGCGGCGATGCGTTCCA
GTTCCGCTCGGAATAATCGCGCGGATCCAAAGGTAATGCCGCTTTGCCGCGCGGTAAG
30 GAATACCCGCAACGCAGCATTGATGGTCATCAAATTGACAGGGCTTTGACTTCGTCCA
AATTCACACTGGGATGGAAGCGCACGCCGCTTTATAGGGGCGACGGCGTTGTTGTGTT
GCCAACCGTAGCCCGTGAAGGTTTTGACCGTGTCTGTCGAGTTTGACGGGAAATTTGA
CTTCCAACACGCGGGTTCGACTCTTCAGGATTTCAAAACGGCCGATCGGTTTTTCAGCC
GGTCACAGGCGGTTTTCACTGTTTTCGCGCGGATTTCAAACGGATTGAGGGTTTTCTTTG
35 CAAGGGCTTCAGATTTTCTTCTTTTCAAAAGAGAGGTTTCGGAATGGAACAAGCCA
TCAGGTTTCGCAACTATAACCAATTTTCAAGCAAAATGTAATAGCGTGTAGTTGGAATCGG
CCCGATTTGATTAATCTATATATGATTTTATTTCCCAAGCCGCACGGAATCCGTCTGAAA
AAAGCGGAACACATATCCAAAAGCAAATGTCCAATTAATAAAGATATAAGAATCCTTT
TATTTTTTAAAAATTTAATTGGAACGGCGCGGGATTGTCACACCTTCCCAGTCCGTT
40 CCGAATCCGGAACACCGCGCGGCAAAACCTGTTTCGATTGTTAACAATCCATACATTAG
AAGCCCTGTGCAACGATGTTAAATAAACCTTTTCAACCGACAGAAAACCGGATTATG
AATGCAGCCATCGAACACGTCCAAGCCGTCGCTTCGATTGGACGGCACACTGTGCGAT
TCCGTCCCGACCTTGCCGCGCGCGCAGAACGATGTTGGAACAACCTCGGTATGAAACCG
CTGCCCTGCCAAAGTGGTCGAAAGCTATGTGGGCGACGGCATCGGCAAACTGGTTCACCGC
45 GTCTCACCACGACCGCGACCGCGAAGCCGATTCCGAAGTGTGGGAAAAAGGTTTCGTA
TCTATATGAAATACTACCGCGACCATTTGAGCGTCTTACCCGCCCCCTATCCCGAAACCG
AAGCCGGGCTGGCATTGCTTAAATCTTTGGGCATCCCGCTCGCCGTCGTTACCAACAAAA
ACGAAATCCTTGCTCCGAGCTTCTAAACAACCTGGGACTCGCCGACTATTTAGCCTGA
TACTCGGCGGCGACAGCTGCCCGAGAAAAACCCAGCCCCCTGCCGCTGCGGCACGCGC
50 CCGAAGTTTTGGGTATCGATGTTGCAACATGGTTATGGTCGGCGACTCGCGCAACGACA
TCATCGCCGCCAAAGCCGCGGCTGCCTGAGCGTCGGCGTTACCTTCGGTTACGGCGATA
TGACGCTGCTCTCGAAGACGATGCGACCCGCCCCGACTGGATTATCGGCTCGCTGCCCG
AAATTTACGAAAACCTGCAACCTCAGAAAAACAAAGAAGAGTAGGCATTTCGGACGGCTCC
GGTTTCGCGCGCTATGCCGTCTGAAACCTGCCCCACGCCGAAACCGCGCCATGAAACCG
55 CAAAAATCCCTACGCGCCCGCGCGATGGACATCCTCTCGCGCAAGAACTCAGCCGCATC
GGTCTGAAACGCAAACTTGACCCGCACGCCGAAAGCGAAGAGGAGTTGAAAAACGTGTTA
AACGAATTTGCCGAACGCAACTGGCAGTCGGATTGCGCTATGCCGAAGCCTATATCCGC

AGCAAAAGCCGCAACACGGTTCATTGAGGCTGAAACAGGCTTTGGCGCAACAGGGCATA
GATGAAGAAACCGCCGCAACCTGCTTCCCGACCGCTCAAGCGAAAACTGGCCGCCATA
GCCGTGTTGCGTAAAAAATTC AACATCCGGCCGCCGACCTTAAAGAAAAACAAAAACAG
GCACGCTTCCTCGCTATCGCGTTTTGATGCCGATACCGTTAGACGGCATTGAAACAT
5 CCTGGGATGACGGCTGGGAGGAAGACTGCTGAACTGAATCCTTGAATCTTTTGCATGA
CGGCGTAACCTTACCTCCATTTCCAACCTTTCCGATTGAGAATAAAATGTCCGAACAATC
CGAGAAAAATCACACCCACTTCTGAAGATGAACGCAAAAACCCGGTTTACCGTATGGG
TCAGGCAGTTGCCGGATTATGCTCGTCTGTTTGGGCAGGCGTATTGGCACTCGTGTCTTT
CCTAGTCTTCCGTTTGTGGCTTTCTAAACAAAATGCCGTCTGAAACCTTCAGACGGCAT
10 CGGCAGCCCATTTCGGCAGGCTATCCCATCATAGCTTTTTTTAGCTTGAATCCACTTTC
CCATTCCCTAAAATTTTCCACACCCATTTCAAAATACCTTTCTTAAACAGGTACACT
ATGACACAACAACGCCAAGTGCCTTCGCACGAACCTATTATGTCCGAAGTATGATGCCG
GACACCGCCAATTTTCAGCGGCAACGTACACGGCGGCGAACTCCTGCTCCTGCTCGACCAA
GTGCTTATTCTGCGCCAGCCGTTACAGCGGCAATTATTGCGTTACCTGTGCGTTGAC
15 AAAGTCTGTTTAAAGAACCCATCCATGTCGGCGACCTGGTTACTTTCTACGCCAGCGTA
AACTACACGGGGCGTACCTCTATGGAATCGGCATCCGTGTCGAAGCACAAAACATCCGT
ACGGGAGAAATCCGCCATACCAACAGCTGCTACTTCACCATGGTTGCAGTCAAAGACGGC
AAACCCGTCCCTGTCCCTCCGCTGGAAATCCTGACCGACCGCCAACGCTGCCGCTACGAA
AAAGCCAAAAACGAGAGACATCAGCCTGCAAGCCTCCGGAGACGTGCTGCGGCTGCTG
20 TGACGGCGGACTATGCCGTCTGAAAGACAGGCACATCGCGCCATCCGTTTCCATTGCAAA
CGGATGAAATCAAGCAAATATAGTGGATTAAATCAAACAGTACGGCGTTGCCTCGCCT
TAGCTCAAAGAGAAGCATTCTTAAGGTGCTGAAGCACCAGTGAATCGGTTCCGTAATA
TCTGTACTGTCTGCGGCTTCGTGCGCTTGTCTGATTTTTGTTAATCCACTATACCCAAA
CACAGTCAAACAAATTTATATGCCCATCCCTTCCGAATAATTTGAAAACACAGCCGCCA
25 AAAACAAAATGCCGTCTGAAAACCTTCAGACGGCATTTCCAACTTGATTTCAGGCAGA
AAGTCAGAACGCGATATAGCTGTTGCGGTTAACCGGTTTGCCGTTTTGACGCACCTCGAA
ATGAAGCTGCGTTCTGGAAGCATCGGTATTGCCATCAAAGCAACCTGCTGACCGCGTTT
GACCTGCTGCCCCGCGCCAGCAATTTTGGTTGTGCCCGTATGCGGTGAGGAAAGA
AGAATTATGCTGGATGATGACCAAGTTTCCGTATCCCTCAAACCTGAACCGGCATAAAC
30 CACTTTGCCGTGAGCCGCCGCCAAAACGGGCTGTCCCGCATTACCGGCAATATCGACACC
CTTGTTGTTGCCGCGGAAATCGGCAACCACTTTACCTTGGCTCGGACGCTGCCAAACAAT
GCCGCCGACCAACGCGTGCAGGAGCGGAGGATTGCGGGGCGGCGCGGG
AACCGCTTTATTTTCCGACGCGGCGCGGAGGTTGCGGCGCGGACTGCACAGCGGTTG
CGCGGCGGGTTTACAGGGGTTTGACGGCAGCCGGTACGGCGGGCCTGCTTTTACGGC
35 TGCGGTTTTCGGTGCGGCATATCCTGCCGTTTGACTTTAACAATCTGACCGATGCTCAA
CATATTGTCGGTCATGCCGTTCCACGCACGGAAATCGTCTTGAGAGATATGGTAGCGTTT
GGAAATGTTGTACACCGTGTGCGCGCGCACAAATAGTATGCGTGCAGCGGTTAATGTCGAC
GGGTGCGGACTGTACGGGCGGTTGCGCGGCAGCCGGTACGGCGGGCCTGCTTTTACGGC
TGCGGCTTTTCGGTGCGGCATATCCTGCCGTTTGACTTTAACAATCTGACCGATGCTCAA
40 CGTATTGTCGGTCATGCCGTTCCACGCACGGAAATCGTCTTGAGAGATATGGTAGCGTTT
GGAAATGTTGTACACCGTGTGCGCGCGCACAAATAGTATGCGTGCAGCGGTTGATGTCGAC
GGGTGCGTAAGAAGGAACGTATGTACCGAAACGGCAGGTGCAGACGGCGGAACATAAGC
AGGAGGCGTATAAACCGCGCGCTTTGCACCGGCGGCACA

45 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 314>:

GNMDE70F gnm_314

CCGTCAAAGCCACCGGCGCAACAGCGCGTTGGGCGGCGACGATTTGACACCGCCTGT
TCTGCCGCTGCTCGAACAAAACGGACTCTCCCACTCAACGGACAAGACAGCCAACTCC
TGCTCTCGGTGCTCCGCGGCGGCAAGGACAATTTACCACGCAAACCGAAGCGGGATTC
50 AGGCGACGGTTTCAGACGGGATTGGAATCGACACAAGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 315>:

GNMDF12F gnm_315

ATGACGACGCAGGCTTCGTCTATCATACAGGTTTCGTGGATTTCGGGCGTGCGGTTTTGG
AAAGTTCGGATTGCGTTTCATTTTCCTCCTTCGGTAAGGTATATATTGTTAAAGGATTTA
TTAAATATTTCCCTGATTGCTTTTAAATCCTGCCTGTTATATCGACCCCGAGTAATGT
5 TATTATCGGGAATATCAGCTTATATATCATTTTATTGGACTTTTACAGCATAAACCTTAA
ATTATACGCCCTTCTTTTTATATCAGCATCACACTCTATATTTTTCTCGTCATTATAAA
AAGCAAAACGAGATATTTCGTAGGATAGATAAGAATAAAGATAACTCSATATATCCCTATT
ATTTTCCATTTCGCATTTTTTTCCAAATATA

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 316>:

gnm_316

CAACAAAGCAATCTAGAAACCCGTCATTCCGGAGCAGGCGGGAATCCAGACCTCCGACGC
GGCGGGAATCTATCGGAAATGACTGAAACCCCGAGATTCTAGATTCACTTCCGTGGGAA
TGACGTGGTGACAGTTTCCGTATGGATGGATTGTCATTCCGAGCAAGCGGGAATCCAGA
15 CCCCCGACGCGGCGGGAATCTATCGGAAATGACTGAAACCCCGCGTTCTAGATTCTCACT
TCCGTGGGGAATGACGTGGTGACAGTTTCCGTATGGATGGATTGTCATTCCCGACAACAC
CGTAATCTCGAAATTCGTCACTCCGCGCAGGCGGGAATCCAGCCCCCTGACGCGGCGGGA
ATCTATCGGAAATGACTGAAACCCCGAGATTCTAGATTCTCACTTCCGTGGGAATGACGT
GGTGACAGTTTCCGTATGGATGGATTGTCATTCCGCGCAGGCGGGAATCCAGACCCCTG
20 ACGCGGCGGGAATCTATCGGAAATGACTGAAACCCCGCGTTCTAGCTCACTTCnCGTG
GGAATGACGTTTCAGTTGCGCTCCGACAACACCGTAATCTCAAAACCCGTCCGACAACAC
CGCAATCTTGAAACCCGGGATTCCGCAyAGGCGGGAATTCAGACCTGTCCGCACAGAAAC
TTATCGGATAAAACAGTTGCCCAAACACGCGTTCTATAGTGGATTAAATTCAAACCG
TACGGAATTG

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 317>:

gnm_317

GGTTTCGCCACCTCTGACTTGAGCGTCGATTTTGTGATGCTCGTCAGGGGGGCGGAGCC
TATGGAAAAACGCCAGCAACGCGGCCTTTTACGGTTCTTGGCCTTTTGCTGGCCTTTTG
30 CTCACATGTTCTTCTGCGTTATCCCTGATTCTGTGGATAACCGTATTACCGCCTTTG
AGTGAGCTGATACCGCTCGCCGACCGGAACGACCGAGCGCAGCGAGTCAGTGAGCGAGG
AAGCGGAAGAGCGCCCAATACGCAAAACCGCCTCTCCCGCGCGTTGSCCGATTCTAAT
GCAGCTGGCAGCAGGTTTCCCGACTGGAAAGCGGGCAGTGAGCGCAACGCAATTAATG
TGAGTTAGCTCACTCATTAGGCACCCCGAGGCTTACACTTTATGCTTCCGGCTCGTATGT
35 TGTGTGGAATTGTGAGCGGATAACAATTTACACAGGAAACAGCTATGACCATGATTACG
CCAAGCTCGAAATTAACCCCTCACTAAAGGGAACAAAAGCTGGAGCTCCACCGCGGTGGCG
GCCGCTCTAGAACTAGTGGATCCCCGGGCTGCAGGAATTCGATATCAAGCTTATCGATA
CCGTCGACCTCGAGGGGGGGCCCGGTACCCAATTGCGCCTATAGTGAGTCGTATTACAAT
TCACTGGCCGTCGTTTTACACGTCGTGACTGGGAAAACCCCTGGCGTTACCCAATTAAAT
40 CGCCTTGACAGCATCCCCCTTTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGAT
CGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCAAATTGTAAGCGTTAATATT
TTGTTAAATTCGCGTTAAATTTTTGTTAAATCAGCTCATTTTTTAAACCAATAKCGCGAA
ATCGGCATATCCCTTATAAATCAAAAGAAATAKACCGrKATAKGGTTGAGTGTTGTTCCA
GTTTGGAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCFAAGGGCGAAAAACC
45 GTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCTAATCAAGTTTTTTGGGGTCG
AGGTGCCGCTAAGCAATAATCGGAACCTAAAGGGAGCCCCGATTAGAGCTTGACGG
GGAAAGCCGGCAACGTGGCGAGAAAGGAAGGAAGAAAGCGAAAGGAGCGGGCGCTAGG
GCGCTGGCAAGTGTAGCGGTCAcGCTGCGCGTAACCACCACACCCGCGCGTTAATGCG
CCGCTACAGGGCGCGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 318>:

GNMDI14TR gnm_318

5 ACCTGCCTATGATTTGCTCTGCCACTTGGGCTTTGCCGTCAAATGCGTGTGGGTGTGGT
TGTCGATTTGTTTGTCCAATTCGTCAATCAGCCGGTCAAATGGGCAATCAGTTGTTTGA
CGCTTTCGACTTGCGTTTCATGAACCTAATGCAGACGGTTTTCTCGGCAGTCCGCATAT
CCACCAGTTGGTTGCGGCGGTTAACCAAGGCTTCCAACACTTCTTCCACTTCGGTGGGCA
GGTGAAGGGCATTGTTTGCGAATCTGCCGTCCGTAACGTCATCTAGAAGTTAATGGCG
10 GTAAGCTAGAGCATGTTTCGGAGTGGGAAGTACCGTTTTTACCGGTGAAACCTTGAACCAA
TACTTTAGTGTCTTTATTAATCAATACGCTCATTCTTTCTCCTTAGGCGTTTACGGCTG
CAACAATTTTTTCGGCTGCGTCATTACAGCCGCTGCGAAGTCAGTTTCAGACCTGATT
CGTTCAGGATTTTCGCGCCGAGTTCGGCGTTGTTGCCTTCCAAACGAACAACGACAGGAA
CGTTGACGTTGATTTT

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 319>:

gnm_319

CCGCTTTTGAAAAAGACGTTTTAAATGCAGATATCCCCGTCCTGCTGGACTTTTGGGCTC
CGTGGTGCGGCCCCGTGCAAATGATTGCCCGGATTTTGGACGACATTGCCGCCGAATTTG
20 AAGGCCGTCTGAAAGTGGTCAAATCAACATCGACGACAACGAAGCCACCCCGTCCCGTT
TCGGCGTGCGCGGCATTCCGACCCTGATGGTGTCAAACACGGCGAAGTCGTCGCCACCA
AAGTCGGCGCATTGGCAAAAGGTGAGCTGACCGCCTTTGTGCAAGCCTCTATCGCCTGAT
AAAGCGCAATCGAAAAAGCCGCCGAAGATTCCGGCGGCTTTTTCGCACCCTTAAGATT
GTGGCGGATTTCCAGCACCTATGGATTTTTTGTGTCGGAATCTTCGGGAACGGATTG
TTTGGAATGTCTTTGACGGCGTATTGTTCCGATACCAAGTCGTCTAAGACGAAGCTGCG
25 CAGGTTGTTGAAAAGTACAAAATGCCGTCTGAAGCGAGCAGCTTCACCGCGCCGTCAAT
CAGCTTTTTGTGGTTCGCGCTGGATGTCGAGGATGTCGGACATTTTCTTGCTGTTGGAAAA
ACTGGCGGGTCCATCACAATGAGGTGCAACCGCCTGCCTTCCCATATGCCGTCTGAAG
ATATTGGAACACGTGCGCGCGGACGATTTTGTGTCGTTCCGTATCGATGCCGTTCAATTC
AAAATTGCGTTTCGCCCAATCAAGATATGTGTTGGACAAATCGACGGTTTCGCTGGATGC
30 CGCGCCGCGGTGGCGGCATAGACGGTGAAGCTGCCGGTGTAGGAAAAACAGGTTAAAAA
ACGTTTGCCCGCGCGCTTTTCGCGGACTTTTTTGCGCGTGTTCGATGATCCAAAAAAG
CCCCGTATCCAAATACTTATCAAGGTTGACCCAAACTTGGCGCGGTTTTCGGTGATGAC
GAAATCGTCGCGCGCTTGCCTGTTTTCTCGTACTGCTGCAACCTTTTTTGGCGTTTCGCG
GCGTTTGAGGCGGATTTGTTGCGGCGCAAAACCGGTAACGAAAGCGACGGCTTCCAAGAC
35 TTCGGCAAGCCACGCTTCGTATTCTTCGGGCGCATCAGCCAGCCGGTATCGTATTCCTG
AAGTGGATTTCGATCGCCGTAAACATCGGCGGCAAAGGGGAATTGGGGGATGTCGCGGTC
GTAAATGCGCCAGGCTTCGATGCCGTTGCGTTTCGCCCATTTTATAAGGTGTTTGATGTT
TTTGCCCAAGCGTTTGGCAAACGGTGTGATGTCGGTCATTGGTTTCAGGCGGAATAAAGT
GGAAAACGGCAATTTTACTGTAATTAACGCCCGATTGCTTGACCGTTTCGGGCAAACCTT
40 ATACCATCCGTCGCTTATCTGTGTCATACGAAGCCATCGCCTTCCAACCTAAACCGCCCTT
ACGGGCGCGTTTCTTCTGTGCTTTGATTTTGCAAAGCATATCTGTGCAGGTTGCCGTCG
ATGTAAACCACAAGCAAGCCGCTTGCAGAACCTGTAACTTCACTTCCCGTATCGTT
ACCCTTCCCTGCTTCAGGCGCTTGAACCTTTCGGACGCGGGCGTTGTTGTCTTCCAAGG
ATAGCCATGTCTATTAAATTTGCCGATTGAACTTGATAAAAAACATTTTGTCCGCCGTC
45 AGCAGCGAGGGTTACGAAAGCCCGACGCCGATTACGGCGCAAGCCATTCCGTTTGTCTTG
GAAGGCCGCGACATCATGGCTTCGGCGCAAAACCGGCTCCGGCAAAACCGCGCCTTTCTG
TTACCGACTTTGCAAAACTGACCAAACGCAGCGAAAAACCGGGCAAAGGCCGCGTGCT
TTGGTGTGACCCCGACCCGCGAACTGGCGGCTCAAGTCGAGAAAAACGCGCTGGCGTAT
GCCAAAAATATGCGTTGGTTCCGCACCGTCAGCATCGTCGGCGGCGCGTCTTTCGGCTAC
50 CAAACCGTGCCCTGAGCAAACCGGTCGATCTGATTGTGCCACGCCGGGCGCTCTGATG

5 GACCTGATGCAAAGCGGCAAAGTTGATTTTGAACGTTTGGAAAGTGCTGATTTTGGACGAA
 GCCGACCGTATGTTGGATATGGGCTTTATCGACGACATCGAAACCATCGTGGAAGCAACG
 CCGAGCGACCGTCAGACTTTGTTGTTCTCCGCCACTTGGGACGGCGCGTGGCAAACCTG
 GCGGCAAACCTGACCAAAGACCCTGAAATCATCGAAGTCGAACGCGTGGACGATCAAGGC
 AAAATCGAAGAACAACTGCTGTACTGCGACGATATGCGCCACAAAACCGCCTGCTCGAT
 CATATCTTGGCGGATGCCAATATCGATCAATGCGTGATTTTACGTCCACCAAAGCCATG
 ACCGAAGTCATTGCGGATGAAGTGTACGAAAAAGGTTTCGCCGCAAACCTGCCTGCACGGC
 GATATGCCGCAAGGCTGGCGCAACCGCACGCTGATGGATTTGCGTAAAGGCCGCTGCAAA
 10 ATTTTGGTTGCCACCGAATGTTGCCGACGCGGTATCGACGTACCGACCATTACCCACGTT
 ATCAACTACGACCTGCCGAAACAGGCGGAAGACTACGTCCACCGCATCGGGCGCACCGGC
 CGCGCAGGCCGCGACGGGTATTGCGATTACGTTTGGCGAAGTGAACGAATACGTCAAAGTC
 CACAAAATCGAAAAATACATTAACCGAAAACCTGCCGAACTGACCATCGAAGGCATGGAA
 CCGACCCGCAACGCAAAATCCGCGAGCGCGCAAGCCGAAAGGCAAAGGCGCTGGGGCGAT
 CGTAAATCCGGCGGTTGGCGCGCGGATCATAAACCGAGCAAAGAAGGCTTCGGCGGCAAA
 15 ACGCGCGCGGAAGGTTTCAAGAAAGAAGGCTTTAAGAGAGACGGTTTCAAAAAAACCGGC
 GAAGGCTTCAAAGGCAAAACGCAAAAGCCGGCGATTCTTTGCAAGGCAAAGGCGAACGCCGT
 TACAAAGACCGCTAAGCCCCAACCTGCCGCATAAACCAATGCCGTCTGAAACCGATTTCG
 AGTTTCAGACGGCATTTTTGCAATGTTTCAGCACCGCCCGGCTTTGATACCCAAAGGATT
 AGGCTGTAATAAAAACCTTTTCCGCTTTGGCAACGATTGAAAATTTCCGTAAATTCAA
 20 TATCTAGATTCTTCTGACGGAATGACACGGAAGGGTTTCAGATGCAGGGTGGGCAT
 TCCTGCCCACCAATCCCGCCCTTGCAACGGTGGGCAAGAATGCTCGCCCTACGGCTTGA
 CTGTTTCGATATGATGCCGTCTGAAAACCAACGGCGGCATGACAAATGCCACCTGCCAAC
 GCACGTAATCAGAATTGCCATCCCGACATCAAACGCTTGGAACAAAAATGCCGTCTGAA
 AATCAAACGGCAACATAACAATGTCCCTAACAAATGCAAAAATGCCGTCTGAAAGCTCTT
 25 CAGACGGCATTTGGCGCGCGGGTTTACCGCTCCTGCCGAAACCGCGCATAGCGGGGCGG
 CGGTAATTGGCGGGCGGGCGCGTTGTGGGGCGGTAACGCTGCGCCTGCGCCGCTGTTGT
 TTTGCACGGAGGCTGCGCGTGTTCAAATCCCTGCTGGTGCGCGCATTTGGGGCGTGCGAC
 TGATGGTAGGCTGCACGCGCGCGCCGGGCGACGGGACTGTCTTGGTTGCCTGCCCGTGTG
 AATTGTTTGGCAGCGCTTGCCGATAAACGCGCCTGCCGCGCGCCGACCAAGGCTTTGC
 30 AGCAGCCAGCTTCTGTGCGATTGGTCGTAAATATACTGCTGCCCGCTTTTACCGGTAACG
 GGTGCCCCGTTGTTGCCGTTTGCTGTGCTTCGGCAGGAATGGTGTCTTTGACTGCTTCG
 GGAGTCAGTTGGTAAACCGTATCGTCTGCCTGCTGTGCGAGCTGCTGTTGCAGGGCTTCA
 ATCTGTTTCTGCTGCTGTTTCGAGCCG

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 320>:

GNMDI61TF gnm_320

CACCTGCACGCACAATTCGTGTTTCCAACGTTTTGCCGATAAAGGGCATGATTTTCGGAGT
 GTTCGCCGCGATTACCATCGCAATTCCTGCAGACCGGCGATTCTTCAATGAAACGAA
 CGCAACGGGTGCA

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 321>:

GNMDI91TR gnm_321

TCGCGCACGATGATGGGGGGCAGTTCTACGGAGATAGGGTTGCCTTCGTAGAACGTTACT
 ATCGCATTGGTCGTCATGCCGTCAACGATGAAGTTCAACGCGATCGGGACGCTTAAAGA
 45 CGGTTTTGGCATCGCCGTCGTCCCGCTCCGATTCTGGAGTTGGGCAACGGTTCGGGTCT
 GAGCATCAACCTGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 322>:

-729-

gnm_322

CAAAAAGTGTACGTACAGCTAGTTTGCAGACCCGATGTACGTCTTTATGGACGAAGAATT
CAACCAATATGAAATCGAAGTTGACAACATTGGCGATCATTTTAATTTATCGGGTATAGA
CTATTTTCGGCGAGGACGAAGATATAGATTTCACGATTGAATACATGGAAGCCAAGTACG
5 TCTATCAACACTATATTAACAACAGCCTTTTATTTTGAGGTTTGGGGTAATTTTAAAC
CGTCATTCTTACGAAAAACAGAAATCAAAAACAGAAATCTCAAATCCCGTCATTCCyGCG
CAGGyGAGAATCTAGACATTCAATGCTAAGGCAATTTCTCGGAAATGACTGAAACTCAAA
AAACTGGATTCCCACTTTTCGTGGGAATGACGGAATGTAGGTTTCGTGCGAATGACGTGGTG
CAGGTTTCCGTATGGATGGATTTCGTATTCCCGCGCAGGCGGGAATCTAGACATTCAATG
10 CTAAGGCAATTTATCGGGAATGACTGAAACTCAAAAACTGGATTCCCACTTTTCGTGGGA
ATGACGCGATTAGAGTTTCAAAATTTATTCTAAATAGCTGAAACTCAACGCACTGGATTC
CCGCTGCGCGGGAATGACGAAGTGAAGTTACCCGAAACTTAAACAAGCGAAACCGAA
CGAACTGGATTCCCACTTTTCGTGGGAATGACGGAATGCAGGTTTCGTGGGAATGACGGAAT
GCAGGTTTCGTGGGAATGACGG

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 323>:

GNMDI95TR gnm_323

TCCACACAACGTCAATAATTCCAACACAAAATACGCCAACCGCATTGGTTTGACACGCCA
GCAACCGCTTTTTGCTTCACAACAGTGATATTGTGTTGGCTTTCCGTTTAAAGATTGTG
20 TGTTAAATGGCGGACAAAGCACCGAGGAAGGCGAAGAAATTTATTTTAAACGCAATAACA
GCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGACA
GTCAACCAGCCAGACAGCCACTTATAACAAGGCGAAGACAGCAAAAACTGCCCGAAATG
AGCGAAGGCGACAAATTGCCCGTGGACAACTCTACGGCGAACAACTTTACCACTCCG
CCGCCACGCTACAACGAAGCCACGCTGGTTAAAGCCC

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 324>:

gnm_324

CGCGATAAAGAGCAGGTTCCGGTTTCGATTACTTAGTTAACGGTATCAAATTACAAGGT
CAGGTTTGAGTCTTTTCGATCAATACGTTGTTCTCTGAGAAACACTTCCGTCACCCAAATG
30 GTTTACAAACACGCCATTTCACCATCGTACCGGCACGCTCCGTC AACCTACAACATGAA
AACAGACCCCAAGCCGCACCGACTTCGACCCTCGTCCAAGTGGAACCGTCCAGCAGCCT
GCCGAATAATCCGCACGAAGCATGACGTGTCATATCTTTCAATACCTTACCGGACAACGG
TAAGGTATTTTTATTTTCAGACAGCATTTAAAAATGTTATTGCAAAACATCCTTCCATTTC
GCCCATTGCCCTTTGCGGAAGGCACTTCCCGAAGGTGGCAATGCTTTGGACGGCACCGCC
35 GGCAACGGACACGACACCCTTTCTCGCACAAACCGCAGGCATCCGGGGGAAAGTGTTGG
GCATTGACATCCAGCCGCAAGCCCTGAACAACACCCGATGCCGTCTGCAGGAAGCAGGT
TACAGCAATGTACGGCTCATCTTGGACGGACATGAAACCTGAAGCAATATATTCCAAG
CCGCTGGATGCAGCCATTTTCAATTTTCGGCTGGCTGCCCGGGGGACAAAAGCCTTACC
ACCCGCACGGAAACAGCATTGCCGCCCTTTCTGCCACCTTATCCCTACTGAAAGAAAAC
40 GGTATGCTTATTGCCGTCTCTATCCGGGACACGAAAACGGCAACAGGAGGCAGAAGCA
ATCGAACAATGGGCAAAAACCTGCCTCAAGAACAGTTTGCCGTTTTGCGTTTACGGCTTT
ACCAACCGGAAAAACAGCCACCTATCTTTTGGTATTTGAAAACTGCGTCAAAAATAA
CTGTTTTCGGTAAAATAAGC

45 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 325>:

gmm_325

TTGGAAGCCTTCTGCAAAGGTCAGGACACGCTTGCGGGCATTGCTGAAGACGAGCCGACC
GGATGCCGGTCGGTCTGTCGCTGAACAATACCTGTGTCGCGCTGGCATACCCGAAAGCC
TTGGGCGCGCTGCGTGTGACAACGCCGTCGTGATTACTTCTCCGCTTTTACGAGCGTT
5 CATCAGGTCGCACTCAACCAGTGCATCAAAAAATACGGCGTACAGGACAATGCGGCTTG
GAAACAGTGTATTGCACATCTTCTTATTACGGCGGAACGTGTGCGCTCTTTGATTCAA
AATCTCAAATAAAACGGAAAATGCCGTCTGAAAGATGTTTACAGCGGCATTTCTATATCGA
CGGTCAGGATTCTTTCCGATCGGGCAGCAGGCTGTTCAACATAATGGCAAGTACGGCGCA
CAAGCCCACGCCGGCAAAGCTGAAGCTGCCCAATTTGAGCGTCATGCCGCCGATGCCCGT
10 GGTGAGTACCGAGCTGACGATGACCAGGTTTTTCGGCAGCATCAAATCGACTTTGGCATC
AATCAGCGTTTTTCACGCCCAAAGAAGCAATCGTGCCGAACAGCAGCAGCATAATGCCGCC
CATTACTGGCATCGGAATGGAAGCCAAAACGCATTGAATTTGCCGAAAACGCCATGCA
GACGGCAAAAACCGCCGCCAAGTCATGATGACGGGGTTGCTGTTTTGGTAATCATCAC
CGCACCCGTTACTTCGCCGTAGGTCTGAACCGCGGGCCGCCGATCAGACCCGCAACGCA
15 TACGCCCAAACCGTCGCTGCAAGGGTTTTGTCCAAGCCCGGGTCTTTCGTATAGTCTTT
CCCCGTACATTGCCGATTGCCATGATGCCGCCGATGTGTTTCGATGGCGGGGGCGACGGC
AACGGGCAGCATAAACAGTGCAGCTGCCAGTTGATCTGAGGCGTTTCAAATGGGGAAC
GGCGAACCAGGGCGCGTGTGCAATGCTTGCCGTGTCCACCAGTCCCATCAGCAGTGCCAA
AACATAACCCGAAGCGACACCGATCAAGATGGGAATCAGCTTCATCATCCTGCTGCCGAA
20 AACCGATACGATGGCGGTAACGGCAAAGGTAAAGCCGGAAAGATCAGCGAATCGGTATAG
TCGATGACCTGTTTGCCGTCCGCTGACnCATTGCCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 326>:

gmm_326

AAAAATTGGGTGGTTTTACCAAAwTTTAAGGGGAATTTTAACAAATTATTAACGCTTAC
AATTTGCCATTTCGCCATTTCAGGCTGCGCAACTGTTGGGAAGGGCGATCGGTGCGGGCCTC
TTCGCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTGCAAGGCGATTAGTTGGGTAAC
GCCAGGGTTTTCCAGTCACGACGTTGTAAACGACGGCCAGTGAATTGTAATACGACTC
ACTATAGGGCGAATTGGGTACCGGGCCCCCTmGAGGTCGACGGTATCGATAAGCTTGA
30 TATCGAATTCTGACGCCCGGGGGATCCACTAGTTsTAGAGCGGCCGCCACCGCGGTGGA
GCTACCAGCTTTTGATTACCCTTATAGTGACGGGTTAATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 327>:

gmm_327

TTGAAGAAATATGCAGGGGAGGGTATATGCGGATTTTTACTTTCAGCTTAATGTGTmTCA
AATCGGGTGTGGGTATGTATAGTGGATTAAATTTAAACCAGTACGGCGTTGCCTCGCCT
TGCCGTACTATTTGTACTGTCTGCGGCTTCGTGCGcTTGTCTGATTTyTGTTAATCCAC
TATAAAAAGCCGCATCGTGAAAAGATGCGGCTTCAGGTATCGGTTGGATTATCTTCAGA
ACCGGTGTAAGGACGGATGCTGACAGTTTTACGGTTCAGCGCGCCTTTGGTTTTGAATTC
40 GACATAACCGTCAACTTTGGCGAACAAAGTGTGGTCTTTGCCCATACCTACGTGTGCGCC
TGCGTGGAATTTGGTACCGCGTTGGCGTACGATGATGGAACCTGCGGGAATCAGCTCGTT
GCCGTAGGCTTTAACGCCCAAGCGTTTGGCTTCTGAATCGCGACCGTTGCGGGTGCTGCC
GCCTGCTTTTTTACTTGCCATTTGTAATGCTCCTAAGTTTTAAGGTTAGGCGATTGCCAC
GATTCGATTTGGGTGAAATTTTGGCGGTGGCCTTGGCGTTTTTGGTAGTGTTTGCGGGC
45 GCGCATTTTGAAGATGCGGACTTTTTTCGCCACGACCGTGTGCCACTACTTTAGCCGTTAC
TTTTGCACCTTCGATAAAGGGTGCGCCAATTTTACAGATTGCGCGTCAGCAATCATCAA
AACTTCGGTCAGTTCGATTTGGCTGTGAGTTCGGCTGGTATCTGTTCTACTTTCAATTT
TTCGCCGACGGAACTTTATACTGTTGCCGCCGGTTTTTACGACCGCGTACATACTCAA
CTCCATAAGGGTTATGGTTAATATCCnGGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 328>:

gnm_328

5 GTAAGATTACCGTCTGGAAGACTGGGGTCGCCGCCAGCTGGCTTACCCGATTAACAAAA
TCCATAAAGCCCATTACGTTTTGATGAACATCGAAACCACTCCCGAAGTGGTTGAAGAGC
TGGAAACCGCATTCCGCTTCAATGATGCAATTATTGCGTCATCTGACCATCAAAACCAAAC
ACGCCGTTACCGAAGCATCCCCTATGTTGGGTGGTGAAGAGGCTAAGAACCCTGTTGAGCG
GTCCGCTCTGAAGAAGCGGTGCCCCAATAATTGGGATTCAATAATCTTGTTTCGCTTGCCG
CGTTAATTGAAAAGGTTTTCCCTATTCGATATACGCCTGCCGAATCCCTGTTTGTAGATA
10 TTATTTTAAAGCAGCAATCGTGGCAGGAGGAAAACGGGCAGCAATGCCCTGTCCAATTGG
AAATTCCGGCAGGATTTTAGGCAGGCAGGCGGAAGAGTGGCAGTATCGGCAAGGTGTAT
ATGTTACGCTCGAAGGTTTTTAGCTCAAAAAAGCAGACGTTCCCTTATGCCGATGCTCA
GGATACAAAATATCAAGAATATAAAGGTTAAACGACAATGGCTCGTCAATCATTCAAAC
GTAGAAAATTCTGCCGTTTACGGCTGAAAAAATCCAAGAAGTCGATTACAAACAAGTTG
15 ATTTGCTGAAAGACTTCATCTCCGAAAACGGTAAAATCATTCTGCACGCATCACAGGAA
CGAAGGCATTCTACCAACGCCAATTGGCTGTTGCCGTAAAACGCGCACGCTTCTGGCTC
TGCTGCCTTACACCGACCAACACAAATAATTTGGAGATTGAATCATGCAAAATTATTCTG
TTAGAAAAAATCGGCCGTCTGGGCAACTTGGGCGACATCGTAACCGTTAAAAACGGCTAC
GCCCGCAACTTTCTAATTCGCGCAGGTAAGGCAAAACGTGCGACCGAAGCGAATATGAAA
20 GAGTTTGAAGCACGCCGCGCAGAACTGGAAGCCAAACAGGCTGAAATTTTGGCAGATGCC
CGAGTCCGTGAGGAAAATTTGGACGGTCAAACCGTTACCGTTGCTCAAAAAGCTGGTGTG
GACGGTCGCCTGTTCCGTTCCGTTACCAATGCCGACATTGCTGCTGCAATCGTTGCTGCC
GGCATCGAAGCCGTGAAAGCAAATGTACGTTGCGCAACGGTCCTCTGAAAGCCGTGGC
GAGTACGAATGGAAGTGGCTTTGCA
25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 329>:

GNMDN42TR gnm_329

30 GGAGCGATGTAGCCCCATTGCGCGAGGACGGTCGTCATACCGCGCTTGCGCCCCGCCTGT
ATATCGCGTTCCGCGTCGCCGACGTAGAGTGTGTGTTGCGGGTCGGCGTGGATTTGTCCG
CACGCATACAGCATGGGTTTGACGCTGGGCTTGGGCTCGCCGACGGTGTGCGCGCTGACG
ACGACGGCGGGTGGGATGATGAAGCCGAGTTTGGGGACGAGTTTGTGCGGTGAAGCGCATG
GGTTTGTGGTGATGATGCCCCATTTGATGCCGCGTTTTCCGAGTTCCGCGATGAGTTG
TTTACGCCGTGGAAGAGGGTGGTGTCTTGGGCGTAGCGGCTGTGTAATCCGCAAGGGAA
TCCGGTGCGCAATCGGGCATACTCGGGATGGTCGGGGGTGATGCCTGCGCCGAGCTTGAT
35 CAGTCTGCCGCGCCGTGGCTGGCTTGGGTGCGGATTTTCGTCCATGCTTTTTGCAGGTAG
TCCGTGGCGGGCGAGCAAGGTGTTGAGTGGCGCCGCGAGGTCTAAGGCGGTGTGCGCGAG
CGTGCCATC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 330>:

gnm_330

40 ACGAGCCGAGCAACCATTGnGATATCGACGCGATGAATCCGGCGGCAAGGTTTGCTGA
TAGCAGACGAACACCAGCCGACATCAAGCTGTCCGCTTGAGGCGAGTCCGCGCGAATAG
CTGTAGGCGCGGCGGAAGAGCGGTGTTTTTTGAGGAATTCGGGATCGCGCGGATTCCGC
AGGCGTATATGGCTGTCTTTGGGCGTGATATCACCTCGGGGTCTTTGGCAAAATCCGGT
45 TGGTCGGCTTCTTTTTGCGGTCCATCGGCGCACCGCTGTATTTGCGCCGCCCGAAAATG
TCGGTTTGCTCTTGAAGCGGCGTCCGTGTCCTCAAAACTCGACAAAGTGGCGGATAAGGCGG
ACTGCCTGATAGCTGCCGTTTTTCGCCCACTCCGGTTCGTCGAGGCTGTTGGCGGCCACC

CCCGTCCACAAAACCTCGTCGGCAGTTTTGGGATCGGAACTTTGGGGTTGCCCGTGCCG
 TCCCTGAAGCCCAACAGGTTGCGCGCCGCCATCGCGCCGGTTCCGATTGGGCTGCCAC
 CCGTCGATACTCCAACGGATAACGGCGGTTTGGACGGTGTGTTTATGATGTCGCGCAGG
 CGGCTTGGCAGGTTTCGGGGGTGAAGGCACAGATTGTCAGGCTCAAATCGCCGTCGCACC
 5 AGCTTTTTTGCAGCTTATCGTTGGAGAAGTCGCGCATTTCTGCAAATGAATCGGTTTTT
 TGTCTTTGAGTCCGAACCGGCCGTCAAACAGGCTGCTGCCACCCCCACGGTAACGGTCA
 ACCCGTCGGGGTTGAAGGCTTTGCCCAAATGCCGCTGCCGGCTGGCGGAAGTTTGTCTG
 CGCCGTCTTGGTAATCGCCGCCTTTGGTGAGAACTCGATGCGGGCGGT

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 331>:

GNMDO70R gnm_331

AAAAACCAGGTTTGGCATCTCCAATAAAGAAGCGCGCGGCTTTGCAAACCAGCCCAAG
 GTAAAGGGGAATGGGCAATATTCAACAATAAAGGACAAAGACAGGGAACGCAAATTATC
 TATAATAAAAGCGGCCGGGGTGGAGGCTCTGTCTTTTCGACAATACCGATACCCTTGTT
 15 TCCCGACAAAGCGGTACTGCCGTTTTTGGCACAGCCACCTACCTGCCGCCCTACGGCAAG
 GTTTCGGGTTTTGATGCCGACGGGCTGAAAGAGCGCGGCAATGCCGTTAATTGGATTCTAT
 ACGACCCACCCAGGGTTGATAGGCTACAGCTACACCAGTGTCTGATGCAGAGACAGCACA
 GGCTGTCCCAAACCTTGCTATAAAACCCGATTTTCTTCGACAACACCGGTTTGGCAAA
 AAATGCCGGGCAGCCTGGATAGGCACCCGACCCAAGCCGCGAAAATTCGCCATTACAA
 20 ATTGAAGGATCATCCATGGTTGGGCGTGTCTTTCAATTTGGGCAGCGAGAATACCGTCAA
 AAATGGCAACTCATTCAACAAATTGATATCTTCTTTTAGTGAAGACAATAATAATC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 332>:

gnm_332

GCCGGCGCGGAAGAGGCGTTTTCAAAGTTCAAATGGAAACGTTGCCGcTkCAAawAmAG
 CxaktGTACACCGTCAAAAACGTATAGTGGATTAACAAAAATCAGGACAAGGCGACGAAG
 CCGCAGACAGTACAAATAGTACGGAACCGATTCACTTGGTGCTTCAGCACcTTAGAGAAT
 CGTTCCTTTGAGCTAAGGCGAGGTAACGCCGTACTGGTTTTTGTAAATCCACTATAACG
 CAAGCACCGBAAAGCCGCGCAACCTCTCCCAACCTTTTTTCAGACGGCATTTCGGTA
 30 ATCTGCTAAAATCGCCCGTTGAGTTTCCACAGAAAAATCCGAAAAATGAATATTTTTTA
 CGAAGAGTCCGGCAATTCAAAATCGCCGCCATCATCAAAAAAACGATGCCACCTACCA
 AGTCGATACCCACACGGCAAACGCACCAAGTGAAGGCGAACAACGTCTTGCCGAGTT
 TGACGGCGATATGGCGGCGTTTTTGGAAACGCGCAGGCACAGCGGCGGACATCGACAC
 CGATTTATTGTGGGAAGTATGCGGCGAAGAGGAATTTACCGCCGAAGCCATCGCCGAAGA
 35 ATATTACGGCCATGCGCCGACCAAAACCGAGCTGGCGGCAACTTTGATTGCGCTTTACGC
 CGCGCCGATGTATTTCTACAAAAAGCCAAAGGCGTGTTCAAAGCCGCGCCGAAGAAAC
 TTTAAACAAGCACTTGCCGCCATCGAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 333>:

40 **gnm_333**

TGGGCAGAGAATTGTGTTTCATGTCTGGCATTGATTTTTCTGTCCATTATCATCGTCGT
 TAAAAGAGTATTTCCATTTTGACGTGGTTCGTAGAATACTGAATGGGTATACTCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 334>:

GNMDQ93TF gnm_334

CCCCGTAAGAAGAAGGCAAAAGCGATTTACAGATCAAATGGCAGCAGAATAAACCCATAC
GGTTCAGTATCGGTATAGATGATGCGGGCGGCAAAACGACCGGCAAATATCAAGGAAATG
TCGCTTTATCGTTTCGATAACCCCTTTGGGCTTAAGCGATTGTTTTATGTTTCATATGGAC
5 GCGGTTTGGCGCACAAACGGACTTGACTGATGTGTGGACGACTTAAACTGAAAGCGGGT
CCAGAAGTTACAGCGTGCATTATTCGGTGCCCGTAAAAAAATGGCTGTTTTCTTTTAATC
ACAATGGACATCGTTACCACGAAGCAACCGAAGGCTATTCCGTCAATTACGATTACAACG
GCAAACAATATCAGAGCAGCCTGGCCGCCGAGCGCATGCTTTGGCGTAACAGACTTCATA
AAACTTCAGTCGGAATGAnATTATGGACACGCCAAACCTATAAATACATCGACGATGCCG
10 AGATCGAAGTACAACGCCGCCGCTCTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 335>:

gnm_335

CCTGAAACGCTGGAAGCCAAATGCTGACCGGCAAATCCGGTTACGATTGTTGGTCGTGCCG
15 GGCATCGCCTTCCTGCCGCGCAAATCGAGGCGGCGCGTATCAAAAAGTCAACAAAGAC
CTGATTCCCAACTATAAAAACATCGATCCCGAACTCTTGAAAATGCTGGAAACCGCCGAC
CCGGGCAACCAAGTATGCCGTCCCTATTTCTCCGCGTGAACACGATTGCGATTACGGCG
AAGGGCAAAGAGCTTTTGGGCGGCAAGCTGCCGAAAACGGCTGGGATTGCTGTTCAAA
CCGGAATACACCACAAGCTGAAATCCTGCGGCATCGCCTGTGGGACACCCCGAGTGAA
20 ATGTTCCCGATTTTGCTGAACTACTTGGGCAAAGACCCCAAAGGCTCGAATCCTGAAGAC
TTGAAGGCGGCGCGGAAGTGTGAAGTCTATCCGTCCGGATGTCAAACGTTTCAGCCCG
TCCATCATCGACGAGCTGGCACGCGCGACATCTGCCTGGCGGCAGGCAACGGCGCGCAT
TTGAACCTTGGCGAAAGCACGTTCCGAGGAAGTGA AAAACAACGTCCGCATCGAAGTGCTG
ACACCGAAAGGTATGGGCTTCTGGATTGAGTCTTGGCTGATTCCCGCCGATGCGAAAAAC
25 GTCGCCAATGCCCACAAAATACATCAACTACACGCTCGACCCCGAAATCGCGGCGAAAAAC
GGCATCGCCGTAACCTTTGCCCCGCCAGCAAACCGGCGCGGCAAAAATGCCTGCCGAG
CTGGTGAACACCCGTTCCATCTTCCCGAAGCAGCAGGATATGAAAGACGGTTTCGTGATG
CCGCAAAATGAGCACGGATGCGAAAAAATGTCTGTCTCAGCCTGTGGCAGAAAATCAAAGTC
GGCACCAACTGATTTGAAGCATTAAAAATGCCGTCCGAACGATGTTCCGACGGCATTTTA
30 TATTGGATTGAAATAGAAATATTTATATAGTGGATTAAACAAAATCAGGACAAGCGGACA
AAGCCGACAGACAGTACAAATAGTACGGAACCGATTCACTTGGTGCTTCAGCACCTTAGAG
AATCGTTCTCTTTGAGCTAAGGCGAGCCAACGCCGTACTGGTTTTTGTAAATCCACTATA
CCGTGCTTCCACGGTCAGGATTTAGATTGCGGACATCTGTGAGAAAAGACAAAAACC
TTCCGCCGTCATTCCCTACAGGCGAGAATCCGATCCGTGAAATTCGGTTGTTTTAAATA
35 AATTCTTGACGCTTTGATTTCTGTTTTTCCGATAACGCCGTAACCTTTGAAACGCGAAAG
CGGTAATCCGATCCGTTGGGATTTGCAACTTCAAATCAATCCGCAAACTGAAATCCCGT
CATTCCCGCGCAGTCGTGAATCCGAACGCGTCCGCACGAAAACCTGCATCCCGTCATTCC
CACGGAAGTGGGAATCTAGGACGTAAATCTCAAGAAACCGTTTTATCCGATAAGTTTCC
GCACCGACAGACCTGGATTCCCGCCTGCGCGGGAATGACGAAATTCGGCGAGCCGTAGG
40 GTGGGCTGTAAGGTGCGGCTCCAGCCCGAAATGTTTGGGTTGCCCGCTTCGGCGCGGAC
TTCAAACAATGGCTTGCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 336>:

GNMDS61TR gnm_336

45 CTTAGATCTCATACCATGTCATTGTGACTTACCCTCCAGGAAGCTTCCTCACTCTGAGAA
GGCCCCATTATTTGTTTTTCCAAGATGCTGACTGGTAAATATTTCTAGGAAAAAATAGA
AATGATTCTACTTTGTTTGTCTATAAATTCATCGTCCTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 337>:

GNMDV66R gnm_337

5 CTTCAGGGTACTTTGAATTTTTTTCATATATCTGCCATATGTTTTGTTAGCCGAATT
TTAGGAATACCAACCAACGCCAGGAGTATAAAAATGATTGAACTTCAACTTCATGAATT
GAAGCTGGTTTCAGGGGGAGGTCTGTAAACAGACAATATAGCTGGAAATGTAGCTAATGC
TGCCACAACCAAGGAGGTCCCACATGGGGGGATTGGTTGCAATACCTGCTGCCGCAGC
GGCAGTTTATTATCTGCCGAAAAATGCTTACGGTGCTGCTGGTGCAAATGGTGTATACAA
10 TGTGACTCGTAATTGGTTAAATGATGCCGTTAATGCACCTCCTTATAACGGAAGACCAAT
CTTTGAGATTGAACATGGATTAAGTCTCCCGCAACAAAAGCAGATAAATCAGGGAACGG
CTACACTGACGGTACAGATTACTGCTGATATTTCTCATCGTCCAGACAATCTCTAGGGGT
CGTCTGAAACTTTCTTAAGTTCAATTTTATGAATAGACCAAGCAACCCTTCTCCGTCC
CGAAGTCGCCGTTGCCCGCAAACCAGCCTTTTTTTTTTTTTTTTTTTT

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 338>:

GNMDW68F gnm_338

CCGCCGGATTTTCTCCTCTTTTAATATAGTAAAATTCATGACCCCTATGGGATTTTCAGG
AATATGTCTTTTATCTTCATAAGCCTCGTATTGAGGATAGGCAGATGGCATTTTTTTAAC
20 CCCGTAAGTGAGCAATCTTCTCCATAGTCGTGCTTAACTACACGCATCTTTTCGGAT
AACAATATCGTCCACGCTATCCAAACGTCGCGTAGAAATTGGATAAAGTGCGCTTTGTT
TTGCTGGATGTATGGCTCGAGCACCCAGCCTTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 339>:

GNMDZ09R gnm_339

25 TGGAGTACCCGCAGAAGAAATCTGGGCATTGCCATTTCAACATATCGCCGCCGGCTTTCG
CGCTATACCACATAAAGGGCAGGGACGCGGCAAGCAGCCAGTGGAAAAGCGGGTGGGGA
TGTCACAGACTTTGGTTTTGTTTTTCATAATCGGTTTCCGGCGGTAGAATCGGTTTGT
TCGAGCCTTATTTTAAACCGATTGGAGGGGCAATGTTTCCCGTTTTTCATCTTCATGCCA
30 GAGCCGCCGCAGATGCTTCAGACGGCATTGCGTTTTCCCCATGTGTTCAAAGCCCGTGC
GGAAGATTGCGACATAGGGACTTTCGGCACGCTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 340>:

GNMEB54TFB gnm_340

35 CCTGCCCGGTGCTGGAAGGTTAATTGAAGATGTGAGAGCATCGGATCGAAGCCCCAGTAA
ACGGCGGCGGTAACATAACGGTCTAAGGTAACGAAATTCCTTGTCGGGTAAGTTCCGA
CCCGCACGAATGGCGTAACGATGGCCACACTGTCTCCTCCTGAGACTCAGCGAAGTTGAA
GTGGTTGTGAAGATGCAGTCTACCCGCTGCTAGACGGCAAGACCCCGTGAACCTTTACTG
TAGCTTTGCATTGGACTTTGAAGTCACTTGTGTACAGATACGTGGGAGGCTTAGAAGCAG
AGACACCACTCTCTGTGGAGCCGTCCTTGAATACCACCCTGGTGTCTTTGAGGTTCTAA
40 CCCAGACCCGTCATCCGGTCCGGGACAGTCAAGGTAGGCATTTTACTGGGGCGGTCT
CCTCTCAAAGCGTAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 341>:

gnm_341

5 CTCGGTACCCGAGCATTACGAATTCGAGCTCGGTACCCTGCGACAGGGCGGCAATCAGGC
GGTTGCGGCGCGGAAAAATTGCCGGCATACGGCCGCGTGCCGATGGGGAATCGCTGACAA
TCAATCCTTTTTCGGCGATTTCATAGGCAAGGTTTTTGTGACCGGCGGATAAATGCGGT
CTATGCCCGTCCCCACACGGCGATGGTGCCGCTTCTGCCTGCAACGCACCCTGATGGG
CGGCGGTATCGATGCCCGAAGCCATACCCGACACAACGGGAATGCCTTTCCACCCCAACG
10 ACTTGCCGAAATCTTTGGCAATCCGCATCGCCTGCGGCGTGCCATGACGGCTGCCGACGA
TGGCGGCGGAAGTTTTGTGACAGATTGCACGTTGCCGCGCAAAAACAAACCGGTGGCG
CGGTGACCCCTGCGTCAGCATTTCGGGAAATCTTCATCCTGAAGCAGCATCAGGCGGC
ATCCGTCaCGCATTTTCnATTCCAATGCCGCTTCTGCCGCTGCCGCGCCAGAGCGCGTT
TTTCCGCATTGCGCCAAGCCTCAAGCGCCTGTTGTGCCGATCAGTGCCGCCAACTGTT
CCGCCGGTGCGGACAAGGC

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 342>:

gnm_342

20 AAAATCAGAAAAGCCTTGGCGGGCTTTTGGAAAGGCACTGCCCCACCTTAACGACACCATG
CTGCTGTTTACGGGATTGTGGCTGATGAAAATTACCCATTTCTCCCGTTCAACGCGCCT
TGGCTCGGTACAAAAATCTGCTTCTGCTCGCCTATATCGCATTGGGTATGATGATGATG
CGCGCCCGTCCGCGTTCGACCAAGTTCTACACCGTTTACCTGCTCGCCATGTGTTGCGTC
GCCTGCATCGTTTACCTTGCCAAAACCAAGTCCTGCCTTTCTGAAACACCGTTATGAAC
AACAGACATTTTGGCGTCATCGCCCTGGGCGAGTAATCTTGAAACCCCTGCCAACAGGTA
25 CGCGCCCGCATTGGACACGCTGTCGTCCTCCATCCTGACATCCGTCCTTAAACAGGCTTCCTCA
CTGTATATGACCGCGCCCGTCGGTTACGACAATCAGCCCGATTTTGTCAATGCCGTCTGC
ACCGTTTCCACCACTCTGGACGGCATTGCCCTGCTTGCCGAACCTCAACCGTATCGAGGCT
GATTTTCGACGCGAACGCAGCTTCCGCAACGCGCGCGCACATTGGATTGGACATTATC
GACTTTGACGGCATCTCCAGCGACGACACCCGACTCACCTGCCGCATCCGCGCGCGCAC
GAACGCAGTTTCGTATCCGCCCTTTGGCAGAAATCCTCCCTGATTTTGTGTTTAGGAAAA
30 CACGGAAGGTTGCGGAATTGTCAAAACGGCTGGGCAATCAAGGTATCCGTCTTTTACCG
GACAGGTAATTCCGACGCGGATGCCGTCTGAAAGCCTTTCAGACGGCATTTTTCCTTTG
CCGCCAACACGCGTGCAAAAAATCGCCCTTGGAAGGGGGCGCAAAAGGAACACAAA
CCACTACCAAACTTTAAATCTGAAACACTGCCTGCCGCATACTGTATCCGACAGGATAT
AAAGCCCTCACTAAATCGTTTCGAGAAATCCAACTTCTTCATCGCCGACAGAAATCTG
35 CCTTCTCCGGTACCAGCTCCAACAGAAACGGTTGAACCGCGTATGCAGCCTGTCCTTA
CACCGCCCGAGCTTCTGGACAACGCGGACAGGGCGGTTTGTAGGCATTATCCTTGCGAG
TCAAGCTCCCGCGCACTGCCGACCCAGCTCAAACGAAGGTTGCGGCTTTCATCCTCAATC
AGCAAAATGCCTGTTTTGACTTCCCCACCTCGGGCTCGCATGAAAGCGCAATATAATAT
TTGCCGTCGATGTTGACATACGCCGCTTCATGCACG

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 343>:

GNMED25TR gnm_343

45 TAAGTTTCCGTACCGACAGACCTGGATTCCCGCCTGCGCGGGAATGACGAAGCTATCCTT
TTGGCCGAAGGTCAAAAATCAGCCGTACAGAGTATTACCTGAATCACGGCGAATGGCCC
GGCAACAACACTTCTGCCGCTGGGAACCTCCTCAACAATCCAAGGGAAATATGTTAAAG
GAATTACAATCCCAACGGGGTCAATAACGGCAAAATGCCTTCAAGCCGGGTTAACAAG
AAATCCAAGGGAAAAAATCCCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 344>:

GNMEE40TR gnm_344

5 AGTGCTTGTGTTGTTGCACCGGTTGCTTTCCGGATAATCGTGGGTAATGCGTTCGGCGGC
ATAAGCTAAATCCGCCTGCACATAATACGGGCTGCGGCTGCCGTCTTCACTTGCCGCCTG
CGCTGCGGAAGAGAAGAGAAGAGAAGAGAAGAGAAGAGAAGAGAAGAGAAGAGAAGAGA
GAGAAGAGAAGAGAAGAGAAGGTTTTTTGGGGGCTGGATTCAATTTTCGGCTCCGTATTG
GTTTTAACTGATTAAAAAGAAAGATTTTCAATGATGTTGCAGGAGCGGACTATATCACGT
10 TTGTGGCGATGTTCAACACAATATAGCGGATGAACAAAAAGAGAACG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 345>:

gnm_345

15 ACGGGACCTTTGATGCTGATGCTGCTGGTCGGCACGGGTATTTGCTGACTGTTTTATTA
AAAGGTTTGCAGTTCACGATGTGGGTATGCGCTGAAACAGGCGTTTATGCCGCCAAAG
AAGCATAAAGCGGCGAAGGCCACGAAGCGATATTTCCCATTTTGCGGCGTTGATGACC
GCCGTGTCCGCCACCATCGGCACGGTAACATCGCCGGCGTGGCGACTGCGGTGGTAACC
GGCGGCCCCGGCGCGGTATTTGGATGTGGATGACCGCCATTTTCGGCATGGCCACCAA
TACGGCGAAGGCGTGTGGCGGTGAAATACCGCGTCAACAATTCCAAAGGCGAAATGTCC
20 GGCGGCCCCGATGTATTACATCGAAAAAGGCTTGGGCAAAAACTGGAATGGATGGCCGTC
GCGTTTGCCTGTTCGGCACATTCGCTTCCCTTCGGTATCGGCAGCTCGGTGCAGTCCAAC
TCGGTTGCACAGGCGGTGCAAACAGCTTCGGTATCGAACCTGCCTATACCGGCATTACG
TTGACCGTTCTGACTCCGTTGTCGTTTTAGGTGGTATTAAAGGCATCGCCAAAGCCGCT
TCTTTTCATCGTGCTGCTATGGCGGTGTTTTATGTGTTGGGCGGTCTTCCATTATCGCG
ATTAATCCGATGCACTGATGCCTGCCGTCAAGCTGATTTCTCCGATGCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 346>:

GNMEG32TF gnm_346

30 AAAACGGTAAATCAATTCATACTTGAATACGTTCTGCGCTGCCGGCTGGGAACAGGCG
CACGGATAATGCTTTGCCGAGTGCGTTTTTAATAACAATTCGGTTTTAAAGTAAACCGT
TTCATGAGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 347>:

GNMEI01TR gnm_347

35 TACCCGGTTCTTAAAGTTGAAAACGTCTCATTGAGATATGCTGATAATGAGCCATATCTT
TTTGAACACATTAATTTGGAATTTAGAGATAATGAAGCAGTTGTTTTAACAGGACAATCT
GGTCGGGGGAAGTCCACTTTGTTAAACATTTTAACAGGTAGCCTAAAACCTGAACTGGT
ACAGTTAGTATTAATGGGCATGATATATATCAAGTTTCTCCATCCTTTATTAGGGGATTG
AGCGGGATTGTTCCGCAAGATGATGTCCTTTTGCAGGTTCTATTGGGGAAATATTTCA
40 TTTTTTGATGAAAGCCACATATGGAGCTCATTGAACAATGTGCACACGTGGTACACATA
CATGATCCATATACTTAACATGCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 348>:

-737-

gnm_348

AAAAAGTTGATAAATGGTAGTAGCATATGGTCTCATAATTTCAAGCTTAGAAATTAGTTAA
AGAAATAGGGGCTGTCTAGATAACTAGCGAAATTCAAATTAAGTTAGAATTATCCnTATG
AGAAAAAGTCGTCTAAGCCAGTATAAACAAAATAAACTCATTGAGCTATTGTGACAGGT
5 GTAAGTGAAGAACGGCAGCAGAGTTAGTAGGCGTTAATAAAAATACCGCAGCGTATTAT
TTTCATCGTTTACGATTACTTATGTATCAAAACAGTCCGCATTGGAAATGTTGATGGC
GAAGTAGAAGCAGATGAAAGTTATTTGGCGGACAACGCAAAGGCAAACGCGTTCGCGGT
GCTGCCGGTAAAGTCGCGGTATTTCGGTCTTTTGAAGCGAAATGGTAAGGTTTATACGGTT
ACAGTACCGAATACTCAAACCGCTACTTTATTTCCCTATTATCCGTGAACAAGTGAAACCT
10 GACAGCATTTTTTTATACGGATTGTTATCGTAGCTATGATGTATTAGATGTGCGCGAATTT
AGCCATTTTAGCTTCGCTGAAACTTCGTTTTCGTATCAATCACAGCACACATTTGCCGA
ACGACAAAACCATATTAATGGAATTGAGAACTTTTGGAAATCAGGCAAACGTCATTTACG
CAAGTTTAAACGGCATTTCCCAAAGCGCATTTTGAGCTGTATTTAAAGGAGTGCGAATGGCG
TTTTAACAACAGTGAGATAAAAGTCTTGTTCATTTTAAACAATTAGTAAATCAAGT
15 TTGTCCTAGTTATCTAGGACAGCCCTTGTTTTTTGTTCGCGGGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 349>:

gnm_349

CACATCCGTGCCTGTGTCTATTGTCAAAAATACCGTAAATAGATTGTATATCCTTTTTATC
20 AACATCATCCTCACTCAATCACTGCCCGATACCGACAGATAACCACGCGTTTGTCTTTC
AGTTTGGAAACGGCGGGCGCGGAGGTAATCGGCTTATCCAGCGTGCCTTTAAAAATAGTA
CGTACAGACCATTGGTTCGGATCGTTGTTGCTCAAATCAAAGCGGTACATATTCCCGCCG
CGGTCCGCGGATAGCGGATATCGACCGTGCCGTCCAAATCTTTATCCACCAACGTGGGG
GACGAAAGCCCGCCCTTGCCTGCGGTACGTTGATTGTTGCAATCGGCGTACCGTTGTTG
25 TTTTCAAATCATACACATACAGCGCGGTTTTATTCTCGCCGTTGTTAATGTCTTTAGTC
GCATAACCGGAGGCGATGAAGGCGCGTATTGCGGTTGTGGGTTTTGCCGATTGCGGCG
GTACCGACGGTGTAGCCTAATTTACGCCATTGTCTGTTTTGACATCAAACATGGAAACG
CCGGCCGGGTTGCTGTTGTGCGATTTTGCTTAAATCCAAGGCGTATGCGCCTCTGCCGCCA
AAGCCCATTTGCGCGAACATAAAGAAGTGTTTTGCTTGTCTTGGTCATCTGTAATGCGG
30 CGCAAGACAAGCCGCGTCCACGCCATAGCGGTGCGCCACATAGCCTTTTTTCGGCAAAG
GTGCGCAGCTCTTTGGCAAGGGTGGATTCCGTGTTTTGAATATCCTTGCGCGGCATCGTG
CCCTTTCAGACGGCAGCAGCTTTGGATTACCGGCGAAGACGCGCGTGCCGACGTACAGG
TTTTGCGTGCCGAAAGCTGCGCGGTGCTGACCGGCATCGGCACGGTGTGGCGGACATC
CCCGGCTCAACGTCCGCGCTTTTCCAATTTGCGCCAACCCGACGCATCGTTTTAGACA
35 GCCGCTGCGCCTGCCCCGAACAGCCATTGGTTACCGACGGACAATCTCCGACCTACA
TCGCCACACTCGAACGCAACGAAGACAGACTGCACCCCTATCGGGAACACGCACACGTCC
GCATCCTGATGCCGTCTGAAACGGCAGACAGCAAATCGACCTGCACCACTGATGCGCC
TCCTTGCTGACGAAGGTTTCGGCGAAATCATGGTCAAGCAGGCTCCGAATCACATCCG

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 350>:

gnm_350

TCAAGGCATTTTTTTTCGATTTTGATAGTCTGCAACTTGAAACAAAACCTACAATATTGT
CAATATCGGCAATTTCCCCATCAAAATCCGCCAAATCAAAAATATAAAAAGGGATGTCCT
CGATGGGCATATCGCGTATTACTTGTTCATCCATAACTGAATTCATTTAAATCAATAG
45 ACTGAGAGAATAAGCATTTAATGCAAAATCCTAAATCATCACTATCCTCTTTTATGATTT
TCCACATAATTATCTTCTTTTCCCGTCAAACGCTCTTTTAGTTACCCGCTTTATATCAA
AATACCGTCTGAAAGCCGAATATCGTTTCAGACGGCATTGTTGACTGTTTAAAGCGGGGGC
AGTTCTACAAACGGAAAGAAATGCTGAAATTTCTGATAAATTTAGGATGTTTCTCTAAA
GCTTTTAAATGCTTTTTCTTTTGAATAGGCGGATCATAGACATCTATCCCCCTTAAGAAG

GCAATGCCGGTCAAGGCATTTTTTTGGATTTTGATAGTCTGCAACTTGAAACAAAACCT
 ACAATATTGTCAATATCGGCAATTCCCCaTCAAAATCCGCCAAATCAAAAATATAAAAAG
 GGATGTCCTCGATGGGCATATCGCGTATTACTTGTTCATCCATAACTTGAATTCATTTA
 5 AATCAATAGACTGAGAGAATAAGCATTAAATTGCAAATCCTAAATCATCACTATCCTCTT
 TTATGATTTTCCACATAATTATCTTCCTTTGCCGTCAAACGCTCTTTAGTTACCCGCTT
 TATATCAAAAATACCGTCTGAAAGCCGAATATCGTTTCAGACGGCATTTTGACTGTTTAA
 AGCGGGGGCAGTTCTACAAACGGAAAGAAATGCTGAAATTTCTGATAAATTTCAGGATGT
 TTCTCTAAGGCTTTTAATGCTTTTCTTTTGAATAGGCGGATCATAGACATCTATCCCC
 CTTAAGAAGGCAATGCCGGTCAAGGCATTTTTTTTCGATTTTGATAGTCTGCAACTTGAA
 10 ACAAACCTACAATATTGTCAATATCGGCAATTCCCCATCAAAATCCGCCAAATCAAAA
 ATATAAAAAGGATGTCTCGATGGGCATATCGCGTATTACTTGTTCATCCATAACTG
 AATTCATTTAAATCAATAGACTGAGAGAATAAGCATTAAATTGCAAATCCTAAATCATCA
 CTATCCTCTTTTATGATTTTCCACATAATTATCTTCCTTTGCCGTCAAACGCTCTTTTAG
 TTACCCGCTTTATATCAAAAATACCGTCTGAAAGCCGAATATCGTTTCAGACGGCATTTT
 15 GACTGTTTAAAGCGGGGGCAGTTCTACAAACGGAAAGAAATGCTGAAATTTCTGATAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 351>:

GNMEI43TR gnm_351

TACCCTCAGGATTGGCATATTGATCCCGATAACCATTTCTCCAACAACCCCGACTTTGTG
 20 GACTCCTGGCCGCCACATGGGGTTGTGGCACCAGCAAGCTGAGATTCATCCGGCGATC
 GCTAAGATTCTGTGACGCACGGGTAAAGAAAGGCCAATACGCTGCAGCCTATTCCGGG
 TCAATTTATTAGCTTCTTATCAACCTCCCATCTCGGTTTCGCATCAAACACAGGCTTAG
 CCTTAGGTATACCGCCCCCGATTACCCACACTGAACAAATCTATAGAGAACTGAACAT
 ATTCCGCAGCTGCTCCGACAGCCCCAACTGCTTCAAGGCCTGAACCGCAATCGTCGGTC
 25 GTTGCTCGCTGGCTTTTTTCCGAGTTTTTCGTCGCCAGTAATGACATGATCGTAGGAAG
 ACGTTACACCAACCAAGCGGGCGGCACAGCCTAAGCCGAAAGTCTCGGCACAAGATCCGC
 CTCCGGCTACTCCTGAAAGAACAACCCCCAACTGCCGAAACGATTCAGCCCCGGGTG
 AGATGTAGCGGTGAGGATACTTTTGTCTTCCCTATCCAGCTTTTCGTATTCAGCCTTCA
 AATAAGAGGCTACTAAATCAGGATGTTTAGTTAGGTAATATAAGGATTCCTTTTTTAAGT
 30 CCTTAAACCTACTGTCAAAGCGTTTGTCTGGGTAAATTCGATAATGCGTCCTATATTTT
 GACGACATTCCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 352>:

GNMEI51TR gnm_352

TCAATACAGTTTCAAAATGGAATGATACGTTCACTTTGGATTTTAGTGGTCTTGTTCA
 35 AGCATTTAACCATGTACAGAAGCTAATCCGCAAAAAGCTTTTGTGGATTGGCCGAGAT
 GCTTGCATATGGCGAACTTCGTTCTTGGTATGAAGGCCGAAGACTAATGACCGATTATGT
 GGAGGAGGCATACAAGCAGGTAAATTTGAAGATTACCAGAAAGTGTGGGTGAGGAGAC
 CGTTGCATTATTAGCTAAACATCGGGTACGCAAGCACATGATATCCTGCACAATGTATG
 40 CTTTGGTCATAATAAAATGTTTCTTTATATGGCAATCACAGGAAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 353>:

GNMEJ36TF gnm_353

CCGCGCTTGAAACGTCGCTTGCAGATACTACAGAAAGAGTGTTCAAACCTGCTCTATG
 45 AAAGGGAATGTTCACTTCTGTGACTTGAATGCAACATCACAAAGAAGTCTCTGAG

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 355>:

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25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 357>:

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35

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 358>:

40

-740-

gnm_358

GCGGCAATGCCGTCTGGAAAAGCGGATACCGCCCTGCTGTTGTACGGGTGCGGCTTCTAT
TTGCGCCGTGCGGCAACTTTGGCAACTTTGGCAACTTTGG

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 359>:

GNMEL61R gnm_359

10 CCGCAAGTGGCGAGGGGGCAAGCAAAGAGCCGAAAGACAGGGGGGACCGCAGACAGGGG
CGAAAGCAGGAGCGGGGAGGGCAGAAGCCAGGGGGGCGGCAACAACGGAAGCCGAGGGG
GGAAGGAACGGGGGAGCAGCGGCCGGGGAGCGAAACCGGAGGGGAGGGGCAAAAGAA
GCCGGAGAGGAAGACGGGGAGCAGGGCAGAAAAAGAGCAGCAGAAGACAGAGCGGCCGAA
GCAGAGACAACGGGGGTGAGTGTGGGACGGACCCAAAACCCGGGGGGCGCTGGGGCGACG
AGACGGAAAGGCAGAAGAGGGCCAACCGAAGCAAAGCACGGGAAACAGCAGCCAGCAAA
GCCGGCGCGCGAGGGGGGGGGCCAGGCCGACAAGCTCGGAAAGAGAGCCAAAGACAC
AGCGGCAAAGAGAAAAAAGGAGGAGGAGAAGCGGGGGGGCCAGGA

15

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 360>:

GNMEN01TR gnm_360

20 CCAATGCAGGATCCGAGCCGAGTATGCAACCTACACCACAGCTGGCGGATTTGCACAAAT
TGAACCTTGTGATGCTGGGTGATGAAGCGCACCATTTAAACGCGCAAACCAAAGGCAAAA
AACAAGGCAATTAGATTAGAAAAGGAAATGAACGACCGCACCAGCAATGCCGAAATTG
AACGTAAAGGCTGGGAGCATATGGTTTTGGAATTGTTACTCAATAAAAATGGCAATCATA
GCCAAAATGTGCTGTTGGAATTTACCGCCACGCTGCCTGAAAATGCCGATGTACAACAAA
AATACGCTGATAAAATCATCACAAAATTTGGCTTAAAAGAATTTTGCAAAAAGGTTATA
CCAAAGAAATCAATTTGGTATCCAGTACGCTGGGTAAGAAAGAGCGAGTGTACACGCTT
25 TATTGTTTGCTTGGTATCGACATCGAATTGCGTTGAAATATGGCATTGCCAATTTCAAGC
CTGTGATGTTGTTTAGAAGTAAGACGATTGATGAATCAAAGCGGATTATCTGGCATT
TAAATTGGGCAGAAAATGTGCAGGCGGTTGATTTTTCGTTTTTAACACATTTTCAACAA
GCTTGAACGATAGCGATAGCGATAACGCCAACGAACAAGGCAAAACCCGCACTGAACAAG
CCCTAAAATTTATGCAGGAAAAAGCGTTGAGTTTGCACATTTGGCAGATTGGGTAAAC
30 AGA

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 361>:

GNMEP25TE72 gnm_361

35 TTCGGACATTCTTAAATTACCCGTGTATCGCTGTAAATCTTAGAGATGGCGGAATATAG
CGGATTAACACAAGGCATTACTGCAATGCTCAGGATTCCGGTACAGGGTCATCGTTGCAC
ATTTAGCCAAACGGCCGTGACCGATTTACGGCGTTTCGGTGCGCCCATGCGGCCCACTT
CGCCGGTAGAGTACGGCGGAAAGTTGTAGTGCAGCATAAAGCGGTGGTGTATTGCGCCG
ACAGCGCGTCGATGATTTGCTCGTCGCGGAAGTACCCAAAGTTGCAACGGCCAAAGCTT
GGGTTTCGCCACGGGTAAACAATGCAGAACCGTGCGTGCGCGGCAATACGCTGGTTTGA
40 TGTTACGCGGACGGACGGTGCGGGTGTGCGGCCGTCGATGCGCGGTTGGCCATCCAAAA
TTTGGCTGCGGACGACATCGGCTTCCAAGTGTG

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 362>:

gnm_362

GCATTGCTTGTGGCCCTTACTTTTAGCATCTTGATCGGCGGCAATTCGGCGTGCAGC
CTGTTGTCGAATCAACGCCGACCGCTACCCCGTCACCTCAAATCTAAGGACGTTCCCA
CTCCGCCCCCTGCCGGTCTTCGGTAGAAACACGCCGGTCAACGGCCCCGCGTTCGGTG
5 CGGCAATGCGGCTGCCAAGGCGGAATATTGCTTCTATAAACAAGACGGTACGGAAATTC
CCGACAAGCATCAGGCAGAGGAGCATCTGCCGCTTAAAGAGAAGGATATCCTGTTTTAG
ACGGTACGCTGAAAGAACAGGCTGACAACTTAAAAAGAAAATCAACGAACGGTATTCTG
ATGTGAGGGTTATCACATCGAAAAAGAAGAAGAAAATATCAATATCAATTTGTCCGTG
10 CGGGCTATGTGTTTACCAGGGCGGAAGGAAAGGATAATGAAAAAGAAAAGACTTCTGATG
CTAAGGAGTTTGTAAACCGATTTAGTTATGACGGTTTTGTATATTATTCGGAGAACGTC
CTTCCCAATCTTTACCAGCGCGGGAACGGTGCAATATTCGGTAACTGGCAATATATGA
CCGATGCCAAACGTCATCGGACnGTAAGGCGGTTTycAGTACGGATTGGGTATACCA
CATATTATGGTAATGAAATTGGGGCAACTTCTATGAGGCTAGGGAT

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 363>:

GNMEP68TB22A gnm_363

ACATGGCATTTCGGACTTCATGCGTTTCGTGCGCGGCTTCGGCTTTTCAGACGGCATATTG
ACGTTATGATTAAACAGTTAACAAGATTTATCACAACGCCGTCAGAGAC

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 364>:

GNMEP74TR gnm_364

ACTTCAGCCTCCCAAGTAACTGGCATTACAGGCATGCGCCACCATGCCCAGGTAATTTTT
TTTTTTTGTATTTTAGTAGAGACGGGGTTTTGCCATATTGTCCAGGCTACTCTTGAAC
25 CCTGCCCTCAAGTGATCCGCTTACCTCAGCCTCCCAAAGTGCTGGGATTACAGGTGTGAG
CCACCATGCCCAGCCATCCTTGTTATCAACCCTACCACACTTTAAATCTCTGACAGGG
AGTAAGTATGCAAACGCTCCCATCCGGTCAGGCGCAGTTCTGCCACGAGGTCAAGATAA
GCAGGCAGTTTCGTGCGGGTGCCGGAGAAGAAGACAAATGGCGGCCGCACCATTGCCATC
AGGCGCAGAACTCTACCATGCCGAAGTAGTTTCATCGCGTnCCCTTTCCCCGGCGGCGC
30 GGCTTTGGTTTGAACGCGCGTCGTGCTGCCTGCCTTCAGTTTCGCTGATATACGCCTGCC
GGCAGTGGTGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 365>:

gnm_365

CCTGCAGTTTCTCGATATAGCCTTCTGCATCGGTACGGGTATGTAGGTTGTAACGGGTT
35 TGTAAGAGCCGTTTTCTTTATCCAACGGGCATCGCTGTCCTTACTCGGTGTGGTTTGAC
CGCTGATTTGTCCTTCTTCGTCAACTTCTATGGCCTGACGCTGTTTGCTGCCGGCGGTCT
GAATAATGGTGGCGTCAACGACGGCAGCGGATGCTTCTCTATTTTTAAACCTTTTTCGG
TCAGTTGGCGGTTAATCAGTTCCAACAGTTCAGACAGGGTATTGTCTTGCGCCACCGGTT
40 GCGGTACGCATAAGGTGCTGTAATCGGGGATGCTCAGTTCGTCAAACGGCAAAACAGG
TTGAAATCGATGCGGGTAATGAGGCTGTGTTTCGAGTTCGGGATCGGAGAGGCTGTGCCAT
TGTCAGAGCAGGACGGCTTTGAACATGGACAGCAGGGGATAGGCAGGACGGCCGCGGTGG
TCTCTAAGGTAACGGGTTTTTTGACGGTTCAGGTATTGTTTCGATCAGCTGCCAATCAATC
ACCCGGTCCAACCTCAATAGCGGGAACCGGTCGATGTGTTGGCAATCATGGCTTGGGCG
55 GTTTGyTGgAaAGGTGCTCTTGAGAAATCCCCTAAATGTCTTGGTGGGAATTAGGGGAT
TTTGGGGAATTTTGCAAAGGTCTCTAGATGAGTGAAAAAGAAGTGCAGGCTGCCTAAAAA

GACAGAAAAAGTCTTTCCGGCAGCCTGCACCTTGGTTTCATTTAGTCAGTAAACCCAGT
AAACGACGGTCTGAAAACGCAGAACGTTACGAAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 366>:

5 GNMEQ90R gnm_366

GCTTTGCCGTCAAGCGCGCCGCCAGTTGATTGGTTGCGCGGTGGTTGGGAGAAGCTT
GCGGAATACGCGCCAATACGTGCGCTTTACCGATTTCTGACCTTCGCGTACGGTAATCA
CCGCACCAACGGGGAATGCCATGGATACCGGAGTAGAAGTACCGGGAATACAGATTCCA
CGCCGTTTTCGTCCAAGAGTTTCACAGTCGGACGCAGCAGTGTCTTCTTGAGAGGAA
10 CGACGTTTACCGTCAATCACCACCAAAGTGGACAAACCGGTTACATCATCGGTTTGTTG
GCAACGGTAACGCCCTCTTCCACGTTTTCGAATTTACCATACCTGCGTGTTCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 367>:

GNMEQ91R gnm_367

15 CAAAAGTTTTTCAAATGAAACGGTTGCGGCATCGGGCGGTGTCGACGTTGATTGGTTCC
CGTGTGGTAGGGGAGGAAGCGGCTTCTTCAAACCTGCCTTTGATTGCTGTTGTGCGCGC
GGTGATGGGGAATCGGGAGAGGTGCGCGGTATGTGTGCCGCGGTATTGTGATTGTGCC
GCTGTTTTTCCCGTCTGCGTGTGCGGACAAGGGCTTTTCCGCTCCGCAAACCGGCAAG
CATGGGGACGGAGATAAAATCGTCCGGAATACCGTAGATCGG

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 368>:

GNMEQ92R gnm_368

GAAACGGTTGCGGCATCGGGCGGTGTCCATTTGTATCCGCCCTCCTTCGGGGGCGCGGTT
25 GATGTTGACGCAGATTCCGCTGCGTTTTGACCGATGATGTTGCGCGGTGATGGGGAATCG
GGAGAGGTGCGCGGTATGTGTGCCGCGGTATTGTGATTGTGCCGCTGTTTTTCCCGT
CTGCCGTATGCGGACAAGGGCTTTTCCGCTCCGCAAACCGGACGGCATGGGGACGGAGAT
AAAATCGTCCGGAATACCGTAAATCGGGAAGCGGGCTTGTGCCGTCCGCCTGTCGTGCC
C

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 369>:

gnm_369

CATCGGGCGGTGTCCATTTGTATCCGCCCTCCTTCGGGGGCGCGGTTGATGTTGACGCAG
ATTCGCGTGTGTTTGCCATTATGTTCCGCTGCGGGATAAGCAACATTTATGAGCGGCTA
AAAATGGGACGCCGGTATTCTGATTGTACCGCTGTTTTTCCCGTCTGCCTGATGCGGA
35 CAAGGGCTTTCCGCTCCGCAAACCGGCAAGCAGGGGGACGGAGATAAAATCGTCCGGAA
TACCGTAAATCGGGAAGCGGGCTTGTGCCGTCCGCTGTCGTGCCCTTCAGCACCGGTT
CGTAATAGCCGGTAACCGTACCGTCAAGGCTTCCGTTGCCTGCAACCTGCCACGGCGTGA
AATAGCGTTCAAAAACTGTTTG

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 370>:

GNMER68TR gnm_370

5 CACTGTGCCGCCGCTTTGCCCGTCGGTGCGGCAAGCGCGATGTTGGGAAGATTTTCGTCT
TCACCGCAAATCAGCGCCAGCAGTTTGGCAACCGTTGTCGTTTTGCCCGTTCGCCGCCG
CCGGTAATCACCATAAAAGACTGCAACAGTGCCAAGGCGGCGGCATCGCGCTGCCCTTCG
10 CTGCCCGTGCCTTGAAACCATTTTGCAGGTTTTGCCTCGCGCTGCCCGTCGGGGGCG
GATGTGCCGGCTGCCGCAAGCGTTTTATCTCGGCAGCCAAATCGTATTCCAATGCCAC
ATCCTGCCCAAAAACAGCCTTCTGCCTTCCAAATCAAAGGCGGCGGATGTTCCGACA
ACnGGTGCGAGTGCCGACAGCGCTCAGCCTCGCCACCGCTCAAACGGATATTGAACTTT
TCTCCACTGCGGTCTACGCTGCGACTGTGATAATGCCTTTTTGAGCGTCTTTTTC

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 371>:

GNMER69TR gnm_371

15 CAGGCAGGTTCCGGTCGGTTGCAGCCACTTCAACGACTCCGGCTTCTGGCTGGTCGGCCGT
CTCTTGACATGGACGTACCGACCACGCTGAAAACCTGGACGGTCAACCAAACCTCATC
GCACTCATCGGCTTTGCCTTGTCGCACTGCTGTTCCGCATCGTCTGACAGACGGAAGG
ATAGTAAATGACTACGCATTTTGTGCTTATGGGCGTATGCGGCTGCGGCAAGACCACCGC
CGCGCTGTCCCTGCAGAAACACCTCGGTCAATGTCCCTATGCCGAAGGCGACGAGTTCCA
CACCAGCCAACCGCGACAAGATGGGCGCGGGTATTCCGCTGACCGATGAAGACCGCTA
20 TCCGTGGTTGGGCAATCTGCGCGACTGGATGACGCAACAGGCGAAAACGGTGCGAACCA
CACCATCGTAACCTGTTCCGCCGTACGAATGACCGTTTTTGCAATGCCTGAAACAGGCG
TTCGGTGCAAGTTTGAAGCACTTCGTGCGCGGAACCGCATAGTGTTCAGAAAACGGAT
TGCCGCCCTTGCCGCCGCTTGGGCAATTTCATCTGTCTGCCGTTCCATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 372>:

GNMER70TR gnm_372

25 ACTGGAAAGTGCGCATCGAAGATGCCATTGCCGCCGACGAAGTGTTTCGTTACGCTGATGG
GCGACGAGGTGAGCCGCGCGTAGCCTTTATCGAACAACAACGCGCTGATTGCCCAAAA
TATCGACGCATAAGTGCCGTTTTAAAAAGGAGACGGGCATCGTGCCCGCTCTCCTTTTT
GGTTGGTCAAACGGAACCTGTGCCGTCTGAAAAACCGTCGGAGCAAAATATGATCAGCAT
30 TTTGATATTTTCAAAATCGGTATCGGGCCTTCCAGTTCGCATACGGTCGGCCCGATGAA
GGCAGCCGCCGCTTTGCGGCAGTTTGGATGCACAGGCTGTTGCGATCGTCATCGACAT
TTACGGCTCGCTCGCACTGACCGGATACGGACACGGTACATTTGACGCGCTGACAAACGC
GGCTACCGCGACATTCTGCGCGGAGCCGAAGGCAAGCTGCCTTCATCCACCTCAGTCCG
35 CCGCAAGACATCAACCTCGAGCGCATGATGTGCGCGAGAGGACATTACATGAAAGCAGGG
ATGCTCGAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 373>:

GNMER71TR gnm_373

40 CGGCATGCGGATTGAACATGATGATGTCGCGGTCTTTAAACGTACCTGGTTCCGCTTCGT
CGGTGTTGCAAAACACATATTTTTCGCCCGGGAAAGAACGGGGCATAAAGCTCCATTTC
AACCAGTCGGGAAGCCCGCACCGCGCGCCGCGCAAACCGGAGGTTTGAATTCGTCAA
TCACATCGGTTTGCAGATGTTTTCGGACAGAATTTACGCAGGGCGGTATAGCCGCCGC
GTTTGACGTATTGCTCCAATGTCCAGCAATCGGGATTGGCGGTATCCACTTGGTCAAAAA
45 TCACGCCCTGATTGGTAAATAGCCATTTTGGTGTGCCTGTTTGTTCGTATCGGTTGCG
GTCGCTGTTTCAGACGACCTTAAGATGTCTTTGTGTACCGCTTGAACGTCGTCTGAAA

TAAATCTAGTTTATCAAATCGCTCGGTTTGGAAAGGCAGCCTGCCGCACGACATCCCGCT
TGCCGGCATTCCCGAACGCCTCGAACGCATCCGCACGCAGCACATCCTCCGGCTCAACGG
GCAAGAAATCGGCTTCATCCCCGA

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 374>:

GNMER72TR gnm_374

CGAAAGCGGGAATGCCGAATCCGTCCGCGCGGAAACCTGCATCCCGTCATTCCCGCGAAA
GAGGGAATCTAGAAACGCAAAGCTGCAAGAGTTTATCGGAAATGACCGAAACTCAACGAA
CCTGGATTCCCGCTTTTCGCGGGAATGACGGGGTTTGGCGGGAATGACGAGGGTTTGGGA
10 TTTCTGTTTTTGAATTTCTGTTTTTGTGAGAATGGCAAGATTTTCGGTCTTGTATGGAT
AACGAGATTTTAGATGGCGGGAATTTGTCCGGGAAACAGCAATCTGAGACCTTTGCAAAA
ATAATCTGTAAACGAAATTTGACGCATAAAAATGCGCCAAAAAATTTTCAATTGCCTAAA
ACCTTCCTAATATTGAGCAAAAAGTAGGAGAAATCAGAAAAGTTTTCACGATATTTTCA
GACGACCTTTAATCGTTTTTGTGGATCTCGnACACTTGCTTGTCTGTCGTCATTCCCGC
15 CAnGCGGGAATCCATCCTCAATGGTAAGCAATGTCTTATTAA

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 375>:

GNMER73TR gnm_375

CGGCAATACCGATAACGGTCAAATCCACATAACGGTTGTTGGCAAATGCTTGGCGCACCA
20 TCAAATGCGCCAGCGAGCCTTGTCCGAACAAATCGGCCGCTCGGCATCGCTAAATAGTT
GCACCGGCTCTAAGGCGGGCTGTATGCCCGGGTCAAGTGGGTGCAACCATCAATACCT
TTTGGCGATTTTGGCGCAAACCTTGTACGGCATTGCGGGTGTAAATTCAATATACTGCC
CGGGCACGCGGATGCTGCCCGGAATCGTGTCAAATCAATATGGGGCATCATTACTCTCC
CTTAGTATTGCGGGTTTTGGTATTGCGGGCGGCATCCTCAACCACCACCAAATCGCCGTC
25 ATCAATCATGCGGCGGTAAACAGGCTGTTGCCGTCCAACCTCCACGGCTCTTGGCCGAT
ATATTCGTGCGGGTTGTGTTTTTGAATGAGATTGAGCATAAAATTTAGTAACCTAT
GTTATTGCAAGGTCTCAATCTTTACCGTCATTCCCACGAAAGTGGGAATCTAGAAACGC
AAAGTTGCAAGAATTTATCGGAAATGACCGAGACTCAACGAACCT

- 30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 376>:

gnm_376

GGGCGTTGATTGCGATTGTAGGGTTTGTAGGCTGGAAAAGTTACGGCATTTTTAAAGTTT
ACAGCAWAGCCACAGACAGCCGATTGAGCAGGAAGCGCAAAAAGAAAGCGTTGTGCAGA
CGATGACGGAGCAGCCTGCATCATCAGAGGAAATGCCTTTAAAAAATTCAGACAATTTGA
35 AACCTGAAGACTTTGTGCCGACTTTACCCGAAAAGCCCCGAAAGCAAGCCTATTTATAACA
CAGTCCGACAAGTAAAAACCTTTGAGCAAATCGCCGATGTATAGACGGCGGAAAATCAG
ATTGCACATGCTATTCAAATCAAGGAACACCCTTGAAAGAAATAACAAAGATAATGTGTA
AAGAATATGTGAAAAACGGGTTGCCCTTTCAATCCTTATAAGGACGAACAGCAAAGGACGG
AACAGGTGGAACAGTCCGCGAAAGCGGACAAGCCGAAGTTCTCGTAATGGGCGGAAAGC
40 CGTAGCAAAATCTCATGTACGACAACCTGAAGAGCGCGGAAAACCGTTTGAAGGAATTGGC
GGCGGAGTCGTAAAGCAGAAAGTTCAATCCCTACCCCTCAGGATGGCTTGAGCTGAGTGA
AGGGGGTTAATTGCTAGAATGGCTGTTTTTTTTAAAGTGTCTCAGTCTGGAATCGCTTCG
TTCCGGGGTTGTAGGTGCAGGAAAATATGGCAGAAAAAAGGAAACGGGGGAAGCTTTGTA
AAGATTGGGCGCGCTTTTTACCCAATCTTTATGAATACCCCTTTTCCTTTTTTATGAAC
45 TGTTTTTTCAGTACCGGTAACCTCTCGAACGGAGTGATTGAGACTGAGATACGCCCATTTGA
AAATCAGACATTCGGGTGCGATCAGAAACCTTTACCAAGACCTGCGACCCCAATCTACGG

CAACGGCGACAATATGCCCGATGAGAACTGCTGCCGTTGTTGACAAAATCAATTTGCAG
CAAGGCAAGCATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 377>:

5 GNMER76TR gnm_377

CCGCCGAAGCAATCGAGGCGGCGTGGATATTGTTGGTAATCACCTCAGGCTGCCGCGCC
GCCTGACCAGCTCCGACACCACGGCTCCATCGTCGTGCCGATACTGACAAACAGCGACG
AACCGTCGGGGATGTGTTCCGCAATCAGCCGGGCAATGGCGTTTTTTTCGTTTGTACACC
GGGTTTGGCGGTGCGGCGGCAGGCCCTCCGGCAAGTTCCGCCCGAAGATGCCCGCCGT
10 GATGGCGTTTTCAGGCTGCCGACCTCTCCAACCTCGCGGATGTGCGGCGGTATCGTCTGCG
GGGTAACGTCCAATGCGGCGGCAAGCTCGTCCACCGACATAAACTGATGCCGGCGGACAA
GGCTTAAATCTCTCCGTGCCTTTGGATTTCGGCTTCATCGTTTTCTGAAATCAGATA
CGGCAAGGCGATAAGCTTCAAGCCCTGAATGAGTAGATCAGCCATTGAGGGCTTGGCG
TTTGA

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 378>:

GNMER80TR gnm_378

AAATCCCGTTTATCCACAAAACAGAAAATCAAAACAGCAACCTGAAATCCCGTCTTT
CCCGCGCAGGCGGTAATCTGAACACGTCCGTAGTGAAACCTATATCCCGTCATTGCGACG
20 AAAGTGGGAATCCAGGATGCAGGGAACCGTTTTATCCGATAAGTTTCCGCACCGAAAG
GTCTAGATTCCCGCTTTCGCGGAATGACGGCGGAGGGTTTTAGTTTTCTCGATAAATG
CACATCATCCAAGTCCCGTTATCCACAAAACAGAAAATCAAAAACAACAATCTGAA
ATTCCGTCTTCCCGCTGTGCGGAATCCGGCTTGTTCGGTTTCGGTTCTTTTTCTCGT
TTCGGGTGATTTCTAAACCGTCATTCCCGCGCAGGCGGGAATCTAGGTAnGCATACGGCT
25 TTGTTCCGCAACCATTTGGGCCCCACGCCGAAAACTCGCCACCCTGCGCGAGCAGCTC
GGTCTGTTGGGGCTTCAACTTGGCGGCGGCGACAACCCGTCGCCGAnnAGATATGCCGCG
CTTGTGCAACATTCAAAGGCAGACTGATGCCGAATTGCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 379>:

30 GNMER81TR gnm_379

CGCCCTTTGAATTTGCCCCATAATGCAGCCTTGCCCAAGACCAATGCCGATTCTGGTT
CAGATTCACATTGCCGTTAATCTGTGTCGCTCCAAAGCTGTTTAAAGCCTTATCGGATAA
GTTGCCTGTGTTGCAGGTAACGTAACCGGTATAGTCCGAGCGCACGCAACCTCATCGCC
GTTTTTGTAAACCAAATTTACTTTGGCGTTGTCTGTTGCGGTGATGTTGGCGGTGATGTC
35 GGATACATTTCTGCCGAAGAGAATGATGCGGATTGATTAACCGCAATTTCTGTGGCTTT
GAATGTGCGGTTTATCCAGTCGTCTTCAATACGACTTCATTGTTTTTGGAGAAATGTGC
GTCTTTTGGGCTGAAGATTGTTCAAAAATCTTTCGCGTGTGGTGTGGACGACCTGA
TAACAAGACATTGCCTTGATCTTTAAGCTTCGGTTTTTCTTGATAAATTTCTGCCGCATT
AAAATTCTAGATTGCGGCTTTCGCGGGAATGACGGCGGAGGGTTTTTGTGTTTTCCCGATA
40 AATGCACATCATCAAAGTCCCGTTATCCACAAAACA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 380>:

GNMER87TR gnm_380

CAACAACTTCAGCGCCTGCATTATAGGCAGCATCAACCATTTCAAAAGCTGTTTTAAAG
AGCCTTCATGATTGATGCCGATTTACAGATAATCAATGGTTCGTGGTTGTAACCTACTG
AACGATTACCAATTTTAAATTCGTTGTTGTTTTGCATTAGCTTTCCTTGTGATTAAGAA
5 TGTTCCTGCCTGTTGTAATCAAGCTCAGTATCAATATCGATAGAGTCTTGATGAGACA
TAATATAAAGTTTGGTTGGGGCGATAAAAAACAATTATTTGCAATTAGTGAAGCAGTAT
CATTAAATGTAAATTGCACCATTAGGCCTAAATGCCTGAGGTAATTGTTGGCGAGGCTGCT
CCAAATCGCTTAGATGGCGCATGGGGGCATATTCGCCATTATTGATTGAAGCAAGGTTT
TTAGTGGATGATGCTCCACAAATACGCACTTGCTGCCTGTTGATAATGTTGTCGTGAA
10 TATCGGAATAATTGACATAGTTGAGCATAATGCCCTGATCGCGGCTGCCGACGGCGATAT
TGTCGAATACTTTGAGCCGCTCGGAAAACATCAGCACATAGCCCATATTGTTGCCACGG
AAATATTGCCGCTGATTCGCTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 381>:

GNMER88TR gnm_381

CACGGATGACGCGGTACGGATTTCCCGGGTGGCTTCTTCATAGATTAAATTGCCCGCCG
CGCCGGCAGTGGAGTCCAATACATCGACCAAGGCACGCTGCCGCAATCAGCGTCGCCG
TCGTCGTGCCCGCAGCGGCAATCGTTCCTTTGCGGACAAATGTCTCCGAAAATCGGCATAC
GCAGCAGTATGGCATCCATACGCCGTTGGATTTAATCGAACGCGCCTTCAATTTAAGGA
20 AGCCGTATATGGCAAAGCCAGTGGATCAGCACCATCCAGCCGTATGAGACGAAAAAGT
CGGACATATCCATCACTGTTTGGGTCACTGCGGGAAGTCCGCGCCCATATTGGCGTAAA
CTTCTTTAAAGGCGGCGAGTACGAAATCATCATCAGGAATACCAAACCGATTGGGCATG
CAGAGACAACGGATCCTTTATTTCTCATCAATAGAGAAAACTTCACGAATATGAGC
CCCTGTGCGTAATGGACTGGTTGGTTGTAATAAGGTTACTGTGCCGGAATTAC

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 382>:

GNMER91TR gnm_382

CACGAAGCCCGCGCGGAACGCGTCTGCCACAAACAGCATACGTTCCGGGCGGGGTTTCGC
CAGTTCGCGGCGGATTTCGCTTTGTCTTCACTGCGCGGATTGAAGCCGCACAAGCCTGT
30 TTCCAAGCCGCGCAGGGCTTTTGGAACTTTCTTGAATCGTCCGGCCCATCGCCATCAC
TTCGCCCAACCGATTTCATCTGCGTGGTCAGGCGGTCTGCTCGGGCAGGGAATTTTCAA
CGCGAAACGCGGGATTTTGGTAACCACATAGTCGATGGAAGGCTCGAACGACGCGGGGT
TTTGGCCCGCGGTGATGTCGTTGCGCAACTCGTCCAGCGTAAAGCCGACCGCCAGCTTCGC
CGCCACCTTCGCAATCGGGAACCCGTTGCTTTGGAAGCCAACGCGGAAGAACGGCTCAC
35 GCGCGGGTTCATCTCAATCACAACCGGTTGnGATTGCCTGCGCCCCGCTTGGCGCTGA
TGAATCGTTTCGGCAGGCATTGATTCCTTTTCAAATACCGATGCCGTTTGAAGATGTT
CAGACGGTATCTCCGAACAGACAGATGAATATGGTTTCCAACTGGACAAATACTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 383>:

GNMER94TR gnm_383

CACTACGTTCAATTTCCGCAATTGCTGGTGGGTCGTTCAATTCCTTTTCTAAATCTAATT
CGCCTTGTTTTTTGCCTTTGGTTTGGCGGTTTAAATGGTGGCTTCATCACCCAGCATCA
CAAGGTTCAATTTGTGCAAATCCGCCAATGTGGTTTGAATTTCCCGCCGGGTGCCAATAT
CGTTATACAGCTTTTGAATGCTGGTAAATTTAATTTCAATGCCGTCTGAATGTGGGCTAA
45 ATGTCTCCACTTTGCGAATAGGAATTACCGTATCGCCCTGCAAATCTTCTCGGTAAATA

AAAATTTTGGCTGCGTCGGATCGGTAAATTAATTTCCGTTTATCCACGATATTGTTTT
GATTCACAAAAACAGAAAAATGCCGATAACCTTTTTCAAATAATACAAACGCACCCTGC
TGATGAACGATTTGGACAGCTTGATATTACCGGGCCGA

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 384>:

GNMER95TR gnm_384

AGCGGCACGGTTTGAAGCGGCCAGCCTATGCCGACTGTGCGGTCGTTCCATATTAAAACC
TGTTCCGGCTTCAGGCTTGTAATAGTCCGTGCATTATAGACGAACTCGGCTTCATCGCTC
AGTACATAGAAGCCGTGTGCGAGGCCTTCGGGTACCCACAGTTGGCGTTTGTTCGCG
10 GACAGAATTTCCCTACCCATTGCGGAAAGTGGGGAGTCTTACGCATATCGACGGCC
ACGTGCAATACTTCGCCGACAACACGCGTACGAGTTTGCTTGTGTGTTTCAGTTGA
TAGTGCAGGCCGCGCAATACGCCTTGCCGGATTGGAGTGGTTTCCTGCACGAAGGTG
CGTTCGCAGACTTGGGTTTTAGACCACTCGTCGCGGAAGGTTCCATAAAAAAGCCGCGC
GCGTCGCCGAAGATCAACGCCGCCATCATCGTTTGCCAGCACCTGTTGCCATATTG
15 AACAGCAAATGCGTTGGCTTATTTTTAAATCAGGGAAATCGTCTAGCTTTGAAGTGGG
TCAAAAATCAAAAAGTTTTCAAGGCGAGATTTnTGCC

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 385>:

GNMER96TR gnm_385

CGGCTTCGACCGCGCCGGTGTGGTCCGGATGTGCGGACAGATCGACTTTGTGTTTTTCGC
CGTTTACTTTGAATGTGATGTAGGCATCGGGCAGTTGAGTTTTTCGGCAAGGCAGCTGA
GCAGGACTTCGCCGCTGCCGTTATCCAGGACCGCGCCTTTGAGGGACGAGCTGCCGCACT
TCAAACCAAGATCAATTTTTGGGACATTTTCTTACTCCGGAAAGTTTCAGACGGCATTG
GAATCGGACACGGATACTAACCGGATTTCGTGCCGAATCCGTTTGCCTTCCTGGGCGGGA
25 AAGTAGTGGGGCCGTCTGAAAGGTTGATAnAAGAACAGGCTATTCTAGCAnAAATCTTT
GCAATTGCTTGGCTTAATCGGGCGTTTGCCTGAAAAATGCGGAAGTCACTTGGnGCTCAA
GCAGTTTTACGTACGGAATGGCGGTATCAATGATGTTTCATCTTTTTATCTTTCATCTAAA
GGGCGTCTGAAA

- 30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 386>:

gnm_386

AATCAAGAATCAATAGGAAGGTTAAAAAGGATAAACTTCTTTTATAATTTCTCATCG
TCTTTCAATTATTCGTGATGCAACATTAATAATGGTTATTAATGATGGTAAAGTACTTGA
AATGGGTAATCATGATCAGCTGATGAAACAAATGGATTTATGCACGTTTAAACAATC
35 TTCGGTTCGTTAATAAATCTAATGACTGTGCTGAAATTAAAAAAGTTGCATTAAATAA
TCAGGTATTTAATGAAGCAAAAGCGCTTTTAGAAAAAGGTAATGTTATTTTTCCGGGTAC
CGAGCTCGAATTCGTAATCATGGTCATAGCTGTTTCTGTGTGAAATTGTTATCCGCTCA
CAATTCCACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCTAATGAG
TGAGCTAACTCACATTAATGCGTTGCGCTCACTGCCGCTTCCAGTCGGGAAACCTGT
40 CGTGCCAGCTGCATTAATGAATCGGCCAACGCGCGGGgAgAgcGgTTTGGCTATTGGGCG
CTCTTCGCTTCTCGCTCACTGACTCGCTGCGCTCGGTCGTTCCGCTGCGGCGAGCGGT
ATCAGCTCACTCAAAGCGGTAATACGGTTATCCACAGAATCAnGGGATAACGC

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 387>:

GNMES45TR gnm_387

5 GCGGTGCGGCCCCAACAGCCCATTTACCTTCGTCTTTTCATTTTGTCTTTTCTCCAA
TAAGCCCATTTTCCATCATCTCGATTTTGCCCAAAGTAAAAACGGTGGCGGCTGATTGG
GCGCAAACGCCCAATGTACAACTTTAAATCGCCCAAATTTATGCCAAAAACGCAACTT
TAAACACGTACATTGGGAGGTGCGGCCCAATCAGCCTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 388>:

GNMES47TR gnm_388

10 CGCAAAAAGCTAGCGCACGGCGCTGTTTCTGCGGGTCGATATCGAGCGGCCGCGCCTAA
GCTTGACAGGAATATTGGCCTTAAGTGACAGCATCGGCAATCGTTGACAGCCCATAGGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 389>:

GNMES52TR gnm_389

15 TCCAGCTCGGTAGCAATACGAATTCGAGCTCGGTACCAGGTTACAGGAGAAACAGATTTA
AGAGGTTCTAATATTACAGCCGGTAAAACTTGGTTGTGCGCCACCACCAAGGCAAGTTG
AATATCGAAGCCGTAACAACCTATTTCAGCAATTATTTTCTACACAAAAAGCGGCTGAA
CTCAACCAAAAATCCAAGAATTGGAACAGCAGATTGCGCAGTTGAAAAAAGCTCGCCT
AAAAGCAAGCTGATTCCAACCTGCAAGAAGAACGCGACCGTCTCGCTTTCTATATTCAA
20 GCCATCAACAAGGAAGTTAAAGGTAAAAACCCAAAGGCAAAGAATACCTGCAAGCCAAG
CTTTCTGCACAAAATAATGACTTGAATTCCGCACAAGGCAATCAAATAACCGGTTCCGAT
ATTACGGCTTCCAAAAACTGAACCTTCACGCCGAGGCGTATTGCCAAAGGCAGCAGAT
TCAGAGCGGGCTGCTATTCTGATTGACGGCATAACCGACCAATATGAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 390>:

GNMET50TR gnm_390

25 TGAGCAATTTAATTGCCGCTCGGTACCCTAACATATTGCCGCCAAGCGGTATGGAAGCGG
AAATAATGGTAGGTGGGCTTCAGACGGCATCCGCCCTCCCGTCATTCCCGCGTAAGCGG
GCATCCAGACCTTGGGATAGCGGCAATATTCAAAGGTTATAAAGACCCGTCATTCCCGC
GCAGGCGGGAATCCAGACCTTGGGATAGCGGCAATATTCAAAGGTTATCTGAAAATTTAG
30 AGGTTCTAGATTCCCGCTTTCGCGGGAATGACGAAAAGTTGCGGGAATCCAGAACGTGG
GCAACGGCAATATTCAAAAGCCGCTGAAAATTTAAAGTTCTAGATTCCCGCTTTCGGG
GGAATGAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 391>:

GNMET92TF gnm_391

35 CCGTCAAATAGGACTGCAGTGAAAGTCATTTTGCGCCCTCCTTATTTTCCAACGCAACG
GTGTGGCTGCCGTCGAGCGTGATGTCTTTGCCGTACACCTGCAATCGAGCGACTCGCCT
TTGAGCAGAGTGAAGACGACGTTTCTTTGCCGACGGCGACTTTAATCAGACGGCCGCGG
TAGTTGATGTGAAGGCGTAGCCTGTCCACGCACTCGGCAGGAACGGTGCGAAGCTGAGT
40 TTGCCGCCCCAGGTTTTTCAATTGGGCGAAACCTTGGACGATGGCGAGCCAAGAGCCGGTC
ATGGAGGGGATGTGCAGGCCGTCTCGGTGGCGTTGTTGTAATTGGCCAAGTCCAAGCGG
GCGGTGCGCTGGGACATTTCCACGGCTTTTCGTCTTGCCCAATTCGGGGCGAGAATA

GAGTGAATACAAGGCGACAGCGAGCTTTCATGCACGGTCAACGGTTCGTAGAAGTCGAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 392>:

gnm_392

5 GCACAACTTAATTATGTTGCCTGAAACATCATATAAAAGATAATAAAAGGTACGCAGCCA
TGAATTACGCAAAAGAAATCAATGCGTTAAATAACAGCCTTTCGATTGAAAGGCGACA
TCAACGTTTCATTTCGAATTTTCCCGCCGAAAAACGAACAAATGGAACCATGCTGTGGG
ATTCCATCCATCGCCTGCAAACCTTGACCCGAAATTTGTTTCCGTAACCTACGGTGCAA
10 ACTCAGGCGAGCGCGACCGCACACAGGCATCGTCAAACGCATCAAACAGGAAACGGCT
TGGAAGCCGCGCCTCACCTGACCGGTATCGACGCTTCTCCCGACGAATTGCGCCAAATTG
CCAAAGATTATTGGGACAGCGGCATCCGCCGATTGTCGCCCTGCGCGGAGACGAGCCGG
CCGGTTATGAGAAAAACCGTTTACGCCGAAGACTTGGTTAAGCTATTACGCTCCGTCG
CCGACTTCGACATCTCTGTAGCAGCATATCCCGAAGTGCATCCCGAAGCGAAATCCGCAC
AAGCCGACCTGAwTAATTTGAAACGCAAAATCGATGCGGGCGGAACACGTCATCACC
15 AATTCTTCTTCGATGTGGAACGCTACCTGCGCTTCCGCGACCGCTGCGTGATGTTGGGTA
TCGATGTGGAATCGTCCCGGTATTTGCCTGTTACCAACTTCAGGCAGCTCGGTAAAA
TGGCTCAAGTAACCAACGTCAAAATCCAAGCTGGCTGTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 393>:

gnm_393

20 CGGCTGTCTTCATTGGCGTACGGCGGCTACTGCTCACACCGGTACTACCCGAAAGTTAT
GCAGCAAGCGTAGGACGTGTCTTCAGCACGCAGCGTCTGAACAGTATACAGAGAATCTG
AATATTTACTgCATAACAAATGCCGTCTGAAAAATTGTGAGCTTTTCAGACGGCATTGAG
CCGTAAATCATGGAACGCGTGCGCGCTGAAGCACACACCTTACGCATGGATTTTAGGTTT
25 CATGCAGGCTACAGCTTGCTTCCATAAATCATTTTATCAGAGCTCGTAGGTACGGTTAA
GCTTTTAGGGTTAGCCGGTACAATGTGAATCCATTTTACCTGAATGAATCGTACCAA
ATTGGTACTTAATCCTGATTTCCCATCGCTGCCTATAGGATACCCAAATCAACAACAGG
ATTTCTCTTGCTCCTTTAGAAATAACTGGATAAGCACCTGAATGTATTCCGTTCAACAA
TTCTTGAGGATTAATGTTTTGATTTAAAGTACTCTTACCTTCAATGTAGTTTCTATGTCC
30 TGAATATGTTTCCCTTGAGCTCCATCATGAATTTAGTCCCAATAGATTTGCTTTAA
ATCAACATTGCGGGTTTGAACATTCTCCATCTACAGACTGAGATAATCTGAAGCAGT
GTTATGCCTGTAGGAGTCTGAGAAATCCCCACTAACCGCAGCCTTCCCCGGTTTGGCG
CTTTGTCAGGTTTTTGA

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 394>:

gnm_394

40 GACGGCGAGCATAATGTCGCTGTCGTATTCGTTTCATCTGGCAGCCGAAGGTGCGGATAAA
TACTTTTTTCATGGTTGTGTCTTTCTCAGGCAGCCGTAATCGCGGGGCTGATTGTTGTG
GAATGAAAAAATTCAGACGGCACGACGATGCCGTCTGAAAAACGGTGCGGATTATAGCA
CGATGTGGGTTTTGGAGGCAGGATATTGTTTTAAATATGAATTTAATCGGTGCGGACGG
CTGTATAATGTTTGGCTTTAATGGGAGATGTGTATGAAACCGGCTGTATGGGCGGCATTG
CTGCTGTGTGCGTGTACCAGCAATTCGGCGACAGGGAACATCAGTTCTCGGTTATAGT
GGATTAACAAAAACAGTACAGCGTTGCCCTGCGCTTGGCGTACTATCTGTACTGTCTGCG
GCTTCGTCGCTTGTCTGATTTTGTAAATCCACTATATCAGACGGAAGAGGGAATCGC
45 ACTGGATTGAGCCGAAATGCCGTCCGAAAAACAGCAGACCGATGCCGTCAATCCCGCGCAG
CGGGGAATCCAGACCTTGGGATAACGGCAATATTCAAAGTTATCTGAAAGTCCGAGATT

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CTGGATTCCCACTTTCGTGGGAATGACGGGATGTAGGTTTCGTGGGAATGACGTGGTGCAG
GTTTCGTATGGATGGATTTCGTTCATCCCGCGCAGGCGGGAATCTAGAACGTAAAATCTA
AAGAAACCGTGTTGTAACGGCAGACCGATGCCGTTCATCCCGCGCAGGCGGGAATCTAGA
CCATTGGACAGCGGCAATATTCAAAGATTATCTGAAAGTCCGAGATTCTGGATTCCCACT
5 TTCGTGGGAATGACGGGATTTGAGATTGCGGCATTTATCGGAAAAACAGAAACCGCTCC
GCCGTTCATCCCGCGCAGGCGGGAATCTAGGTTTGTTCGTGCGGAACTTATCGGGTAA
ACGGTTTCTTTAGATTTTTCGTTCTAGATTTCGCACTTTCGCGGGAATGACGAAGAGTTGC
GGGAATGATGGAAGCTATGGGAATAACGAAGGGTTAAAGTAATCACGGGATGGTGTTCG
CGGGAATAT

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 395>:

GNMEW92TF gnm_395

GGTTTCGCTTGTTTTAAGTTTCGGGTAACCTCCACTTCGTTCATCCACGAAAGTGGGAA
TCCAGTTTTTTGAGTTTCAGTCATTTCCGAGAAATTGCCTTAGCATTGAATGTCTAGATT
15 CCCGCTACGCGGGAATGACGGATTTAGGTTGGGGGCATTTATTGGAAAAAGCACAAG
CTGAAAGTCGGCATTCGCGCAAGCGGGAATCCAGTGCCTTGAGTTTCAGCTATTTAGA
ATAAATTTGGGACTCTAATCGCGTCATTCACGAAAGTGGGAATCCAGGACGCAAAAT
CTCAAGAAACCGTTTTACCTGATAAGTTTCTGCACTGACAGACCTATATTCTCGCCTGCG
CGGGAATGACGAATCCATCCATACGGAACCTGC

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 396>:

gnm_396

CCGGGCGAAGTCATCGCCGGCGCGCTCGGCAGAGACCTCAAACAATGCGCCGTTTACGGC
CGCGAAGGCCACACCGGTCCGCGCGATCCGTGACCATCGGCTTTGCCACCGTCCGCGCA
25 GCGACATCGTCGGCGACACACCGCCCTCTTCGCCACCGACGGCGAGCGCGTGGAAATC
ACCCACAAGGCCAGCAGCGCATGACCTTTGCCGCGGTGCCGTCCGCGCCGAGTTTGG
GTCAACGGCAAAACGGGTTTGTACGATATGCAGGACGTACTCGGGCTGAACAGCCGTAA
CCCCCATACAAATGCCGTCTGAAGAATATTGTTACACGGCATTTTGCCGACAGGCTC
CGTATCGGCATATCAATGTTTCAGCACACAGGACGACGCATAAAGCGTCGCCCTATGTGT
30 TGCCCTGAGTCGGCACGGGTTACGCCCCCTCCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 397>:

GNMEW95TR gnm_397

GTCCGATGTCTGTATTGATTCCAGATCAGTCACCATTTTTTGGGAGTCTTCAATGGTTAT
35 ATCGCCAAATTCTTTTCATGAGCTTTGAACTGTCCATTAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 398>:

GNMEZ23F gnm_398

TGGTTTTGGGTGGGTCAAACAACCTCTACTTACATGGATCGGCAAAACGACGATCACC
40 CTGCAATCACTTCGTCAATCAGGTAACAGTCAAACCTCCACCGCCAACGACAGCGCAAAAG
CCAAACGCGCTTTCATACCTGAAGAATAGCGTTTCACCGGCTCATACAAATATTGCCCCA
GCTCCGAAAATTCTTCCGTAAACGCTTTCACATAATCGATATCGACATTGTAAATCCGGC
AGATGAAACGCAAAATTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 399>:

GNMEZ79TR gnm_399

5 TCCCTCTGGCCTGAACCAAGCCCGAAATTATACCTGCAACATCCGACACAAACAAAGGCA
TTTCAATATTTTTATTTCTATGAAATAAAAGCGTGTAGCAGGCTTACACGCTTTTATTT
GGCTGGGGAGGAAGGATTGGAACCTTCGCATGCTGGAATCAAATCCAGTGTCTTAACCG
CTTGACGACTCCCCAAAAGGGCTGGCTGGGGAGGAAGGATTGGAACCTTCGCATGCTGG
AATCAGGATCCACTGTCTTAACCGCTTGACGACTCCCCAACTCGCTTGACTTGGCTGGGG
AGGAAGGATTCTG

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 400>:

GNMFC24TR gnm_400

15 CTCGAGGGAATTGACCGGCAATTCTTCAAGCAATAAACAGGAATACCAATTATTTAAAGA
TAACTTAGTCAGATCGTACAATAAAGCTTTGAAGAAAAATGCGCCTTATTCATCTTTGC
TATAAAAAATGGCCCCAAATCTCACATTGGAAGACATTTGATGACCTCATTCTTTCAAT
GAAGGGCCTAACGGAGTTGACTAATGTTGTGGGAAATTGGAGCGATAAGCGTGCTTCTGC
CGTGGCCAGGACAACGTATACTCATCAGATAACAGCAATACCTGATCACTACTTCGCACT
AATTTCCC

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 401>:

GNMFC24TF gnm_401

25 AATTCCCCGAGGAATTATTCGATAAAGATAAGCTTACATTATGAAGAGCAGCATATTACA
GCCGTATGGGTCTACTTGACAGTAAAATTTGAAGAGCATTGGAAGCCTGTTGATGTAGAG
GTCGAGTTTAGATGCAAGTTCAAGGAGCGAAAGGTGGATGGGTAGGTTATATAGGGATAT
A

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 402>:

GNMFC32TF gnm_402

30 GCAGTCGACAGTAGnAGATCCCCACCCGTACCGATGCAGAAGGCTATATCGAGAACTGC
ACATTACCCCCGCCAATGCCCATGAGTGCAAACACCTGTCGCCGTTGTTGGAAGGTCTGC
CCAAAGGTACGACCGTCTATGCCGACAAAGGCTATGACAGTGCGGAAAACCGGCAACATC
TGGAAGAACATC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 403>:

35 **GNMFC63TF gnm_403**

CGATAAAAACCTGCGCTATCACGGCCTGATGCAGGGCATTTCGCGCGAAAAATCCGACGA
AATCTTCAACTACATGGAAAAATTCGCCGGCTACGGTTTCAACAAATCCCACGCCGCCG
CTACGCCCTGATTTCTACCAAGCCGATGGCTTAAAGCGCACTACCCCGCCGAATTTAT
GGCGGCGACCATGTCCTCCGAATTGGACAACACCGACCAGCTCAAGCATTTCTACGACGA
40 CTGCCGCGCCAACGGCATTGAGTTCCTGCCGCCGACATCAACGAATCCGACTACCGCTT

CACGCCGTATCCGGACATGAAATCCGCTACGCGCTCGGCGCGATTAAAAGCACGGGCGA
GCCCCCGTCTGAATCCATCACCSCCGCGCGGCAAAGCGGCGCAAGTTTACCGGTCTGTT
GGACTTCTGCGAGCGCGTCCGGCAAGAACACATGAACCGCGCACCTCGAGGCCCTGAT
ACGCGGCGGCGCGTTGACAGCATCGAACCCAACCGCGCCATGCTCTTGCGAACATCGA
5 CCTCGCTATGGACAACGCCGAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 404>:

GNMFD08TR gnm_404

10 ATTACGTATCGAGGCATTGAGCTCGGATACCCGGGTAAATATCAGATTTTGGAGCAGTA
AAATTTATTATGTACACTAATCCAAAACAAAATCAAATATTGAAACTAGATTTATTTTC
GAATAAATAGAAAGCCGTCTTATATATAGTAATAAATTAATAACCTGTTTTCTTATG
CCTTTATTGTGCCATGCAGTTGAGTTTGATGAACTCAATATAACGACTGTAAAGATAAA
TCTATGTTATGTGCTGTCAGAATTGATTCTCCCAAAGGCAATAACTATAGTGGATTAA
15 AAAATCAGGACAAGGCGACGAAGCCGCACACAGTACAAATAGTACGGCAAGGCGAGGCAA
CGACGTACTGGTTAAATTTAATCCACTATATAAATCTATGTGGTTTGACAAATGGCAAGT
TAGTATTTATATCCTTTACTAATCAACAAATGGAAAATCAAAGTCGCCATCTCTAGCGA
TGTTTATTAGTATGACAAAATATCCAGTACCAATATTGATGAATTTTAGCATCTTTCG
ATCCTGATAAATATCGAATATTTTCATGATCCAAGATATAAATTTTACCTAGTATGTCGA
20 ACTCATTGTAATCCTTATTCTCTTTTGATATTGATAGCAAATATAAACCTGATGAGAAA
GATAAATCTTTTTTCAATCAGCAGATAACACAGATTTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 405>:

GNMFE17TF gnm_405

25 GTTATCCAAAGGAGGCTGTGCAAGGCAAGGCATGAAATCGAGCAGTCCGTATTGTTTGAC
TTTGTGCGTGGTCAATGACGACTTGGCGGAGCGGAGGAGGATTGCGCCATATTGTGAAT
GCCTGCCGTCTGAAAAGGTCGCGGCAACTGGGGTTATTGCGAGATTTGTGGAAAATTCC
TAGAAAACGGCGAAAATACCCGTTTCCCAATTTAAATATTTTGAAGAAAAGCAAATAA
TATGGCAGGTATTACCACCGAAGCTGTACCGGAAAAATTTCCAACCATTTTGACCTGAC
ATTGGTAACGGCTCGCGGGGCGGCAACCTTGAAAACGGCAACACGCCGCTTGTTGGACAA
30 TGTCCGCACTACCAAACCGACCGTTACCGCCTTAAGGGAAATCGCCGCCGACATATCGG
TACAGAACTGTTGACGCGCAATAAATAAATTCTGCCGGAACGCACGCCGGAACACTTTG
CCGCCGTGCAGTCCGACGGTTTGAATGAAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 406>:

35 **GNMFE18TF gnm_406**

CTTTGGATGAAGATGGTGTAAATGCACGCTTTGGTCGGACGGGTGCAATGCGCGCTTTTCG
ACTTGCCCGACCATAAAATTTTCATACAAAACAGGGCTGTTGACGTTGAGGATGCGGTCTG
TTTTTACCAATCAAATTCAGCGCAGCCCGCTTTGCCCGATGGCGGTAACGGGCGGAATG
TCCTGCACTTGGAACACGTCTTTTGCTCGTCTTTTGCCGGGTGTAAAGGCGATGTAC
40 GAACCCGAAAGCAGCGTACCCAAACCGGTTACGCCGCTTTGGTCGATACGCGGCTTGACA
ACCAAACTGGGTAAACCTGCGGATAAGGCCGAATACTTCGGCATTGATTGGGCGGTTA
CTTCAACGCCTTTTGGTCGTGCGCAGTTTGATTTCGGGTAACGCGTCCGACATCGATGC
TCAATACTTTGATGACCGTATTGTTGACCTCAATGCCTTCCGCGCTGTCCATCAGGAGCG
TAACCACAGGCCCTGTTGCGGATTTCCTTAACCCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 407>:

GNMFE54TR gnm_407

5 CTCGGCTACCCTGCAAATTCAGATTCCCGTCTGCGCGGAATGACGATTCATAAGTTTC
CCGAAATTCACATAACCGAAACCTGACAGTAACCGTAGCAACTGAACCGTCATTCCCA
CCACTTTTCGTCATTCCCGCGAAAGCGGAATCCAGAATCTCGGACTTTCAGATAATCTT
TGAATATTGCTGTTGTTCTAAGGTCTGGATTCCCGCCTGCGCGGAATGACGAATCCATC
CGCACGGAAACCTGCACCACGTCATTCCCACGAACCCACATCCCGTCATTCCCGCAAAG
10 CGGGAATCTAGGACGCAGGGTTAAGAAAACCTACATCCCGTCATTCCCTCAAAAACAGAA
AACCAAAATCAGAAACCTAAATCCCGTCATTCCCGCAAAGCGGGAATCCAGTCCGTTT
AGTTTCGGTCATTTCCGATAAATTCCTGTTGCTTTTCATTCTAGATTCCCACTTTCGTG
GGAATGACGGCGGAAGGGTTTTGGTTTTTCCGATAAATCTTGAGGCATTGAAATTCCA
GATTCCCGCTGCGCGGAATGACGATTCATAAGTTTCCCGAAATTCACATAAGCGAA
15 ACCTGACAGTAACCGTAGCAACTGAACCGTCATTCCCACCACTTTTCGTCATTCCCGCGA
AAGCGGGAATCTAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 408>:

GNMFF86R gnm_408

20 GAATGACGATTCATAAGTTTCCCGAAATTCACATAACCGAAACCTGACAGTAACCGTA
GCAACTGAACCGTCATTCCCACCACTTTTCGTCATACCCGCGAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 409>:

GNMFG09F gnm_409

25 CCGACTACGATTTACTTATAAAAAATGGACAGACAGTAAATGGTATGCCTGTTGAAATTG
CAATTAAGAGAAAAAATAGCTGCTGTTGCACAGACTATTTAGGTTCTGCAAAAGAAA
CTATCCACTTAGAACAGGTACTTATGTATCCGCAGCTGGATAGATGATCACGTTTCATTG
TTTTGAAAAAATGGCTCTTTATTATGATTATCCAGATGAAATTGGGGTCAAAAAGGGTGT
TACGACAGTGATTGATGCTGGGACAAACAGGTGCTGAAAACATTTCATGAATTTATGACTT
AGCGCACAAGCAAAAACAAATGTTTTGGATTAGTCAATATTTCTAATGGGGCATCGTT
30 GCTCAGGACGAACCTCGCAGATTTAAGTAAAGTACAAGCGAGTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 410>:

GNMFG29F gnm_410

35 AAATCAGAGAAGCTACTGCGAAAGTTGCTGCTGAAAAAGGTGATCAAAATGGATAAGCGT
TCGGTGCTATGATGGATTAAATTCGTTGGAAACTGATTAGACAGTTTCAGTGACACAATT
AAGAGAAATTAAGCAGGGCTCCATGAGTTGGTAGAAAAAATACCACGTTGGAAATCGG
AAACCAACGCTTACGAGAGCATCTCCAAGAACTGAATAAGTTAGCAGGAATACAACCTGA
AACTGAAAAACAAGAGCTATCAAAATCTCGTATGAATTTGAAAAAATTTATGAAGAGGG
40 CTTCCATGCTGCAATATTTTATATGGTTCAAGACGTGAAAATGATGAAGAATGTGCCTT
TTGTCTTGATGTTATTTATGGGGAAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 411>:

GNMFI01F gnm_411

CCTGTCGACCCAGATGGTTATAAAATCGAAGTCATTTCGTGAGTGTTAAAAAGTTTCACTT
GTTCACTTACTGAGCTTTTTGTGTTTGAGAGCTGTCCGAGACAAAACCTTGCTCGACTTC
TTCTCAACACTTTTTTCAAAAAAGTGCTACAATAGAACGTATGAATTTATTGAGGATG
5 TGATGTTATTATGACAAAAAAATTATTGGAATCGCTGGCAATCAACTTTTGCAGGCAGC
TGAAGTGTTCACGGTAACCAAGTGACGTACACCCACAAGGTTTTGTCAGCGCTGTTCA
AGCCGCAGGTGGCGTTCCTCTCGTTTTGCCAATTGGCCCCAAGAATTAGCCGCTACGTA
TATACAACAAATTGATAAA

- 10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 412>:

GNMFI03F gnm_412

CCGGTGAGTTGCTGCTTTTAAATATACTCTCATCTTTTATTGTTTCTGCTTCTTGATTTT
GCTTTCATATTCTTTTTCTAATTCTTTTACTTGATTACTTAAAGTTAAACTCTTTTCATT
GATAATATCTTCGATGGAATTATTTACTGAATCTTTAATTTATCAGTTTGTGATAAAG
15 TCCGTATAATTGTGTAAGTAAAAAGGCCATATAACAGTCCTTTACGGTACAATGTTT
TTAACGACAAAAACATACCCAGGAGGACTTTTACATGACCCAAGTACATTTTACACTGAA
AAGCGAAGAGATTCAAAGCATTATTGAATATTCTGTAAAGGATGACGTTTCTAAAAATAT
TTTAACAACGGTATTTAAATTTTCCAAAAAACC

- 20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 413>:

GNMFI04F gnm_413

CCGGAAAGAAAAAATATTACTTTAGTTGAGTTAAGTGAGGAGTTAGGTATTCCACGTTT
CACTCTTAATAGGTATGAAAACGAAGATAGCGAACCAAAACAAGAACTTGGAAGAAAT
AGCTGATTATTATGGTGTTTCTACGGCTTATTTAATGGGGATATCCAACCAAAAGGTTAG
25 CGAAGAAAAAGCTTTGACGGCCGCAAGAAAGTTTATCAAGTCTATCTTTCCGACGACGA
TTTAGGAAAAAGAAATTCGAAAAGCTCTAATGTATTTAATAAAATGATTTAGATAGTGT
CTTAAACAAGCAATGCAGCAGTATTTTACTATCCAGCCGTTGAATGGAATACAGAATT
TCAATCTT

- 30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 414>:

GNMFI05F gnm_414

TGCGCCGCTGATTCTAAATCATTGTTGTAATCGTCGTTAGGGATAATCGCTGCTATTTT
CCAAGTCGTTTTTGCGTTATTTATCTTTTATAATTCTATCGGCACAACTCGTTGACGGT
TATTCTGATTATGACTTATTCTCAGGATTTCTAGCAACAGTTGTTAAACGGAAACGGAT
35 GAGTGAGCAAGTTTTCCAGCTTTAATGTGGGTAGTGGTCTTTCCTGTTTTCATGGCGGT
TGTCTTAATGATTATCAAGGGATGAGTTTAACAGATGGTAAACGTGGACAGCTTTAAT
TTGTGCAAGTGCAGGAACGGTACTTTCATTTTTAGCAACAATGGGCTTGCATCCATATAT
CGAATTATTAGT

- 40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 415>:

GNMFI07F gnm_415

CCGGCCTATCGATTTCCACATTTACAGTTGGCAACTGGCGGTGGAAGCGTTATGCCCA

5 TAGTGGTCTATTTGATTGGATAAAAAAATCAAGGACTATTCTCCTGAAGAGTTAGCATT
ATTTTATATGCTCCACAACAAAAGTAGCTAATCCACCCAAAGAGTGGCCTCATACAGC
TTTGTATGAAGGAATCGTCCCGGTATGCAACGTAGCATATTGCATACAGACGAAGGCCAA
ACGTCATCAAAAATACCTTAATCACTTTGTTACCGTAAAAAGATGTCCTGATTGTTTAGG
AAGTAGAGTCAATGAACGTGTTCTAGCTGCAAAATTAATCAGAAAAGTATTGCTGATGC
TGTTGACATGCCACTCAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 416>:

GNMFI08F gnm_416

10 ATTCACCTAACTCGTTAAGCACCGAAGCTTCAATCAAGCAAGGTCATTTATTTGTC
TTCCTTAGTCAATCGAGCAAAGGATATCGGTTGTGATCAAGAGAGCATCATTCAATCGTA
TAACTATGGTGGTGATATTTAGACTATGTTGGAAAAATGGAAAGAAGTACAGCTTTGC
CTTAGCGGAATCTTTTCAAAGAAAAATCAGATGGGAAAAAGTGACCTATTCGAATCC
AATCGCTATTAAGGAGAATGGTGGTTGGCGTTATAACTATGGAAATATGTTTATGTAAT
15 GTTAGTGAAACAATATCTTACTACAACGAAGTTTGATGATAAACCGTTCAAGGAATTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 417>:

GNMFI09F gnm_417

20 CGGAGTTTTGATGAAGATTGTTATCAAGAGTGTATGATTAGGTTATATTTAGCTTTGAAA
AAGTTTGAAATACGTGAATGATACATTTTGAATAACAGACTCCGTCTACCACTCTTTA
TTATTACTGTTCAAAGATATGTTCAAATACACTTAACACTTTTGTAAAAAATATAAA
AAATACTGAAAGATTACTTCATTTTATTAATTTAATCTATTGAATCATGTAGAGGTGGC
GTTAACCATGTATTTATTTTATTAGGCATGTTTATAGGATGTTTGCTTGGTATAACGAT
TTTAAATTGTTTAGCCATTGCAAAATATGATGATATGAGTTCTGGAAGAAATTAGCTCTT

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 418>:

GNMFI10F gnm_418

30 CCGAATTTTTCTTTTACATCCGAAGGTTTACTACTTCATTATTAAGATGTTCCCAAACA
ATTTGCTCTGGCGGTGCCGTTTTATTATAAATACGGTAACAATACGATCTAATGATTTT
CCAAGAAGTGATTTCCCGACACCTTTATTGTACTGTTGCCTGATCGTCTACAACTACG
GCATCAACATAGAAATAGAGCCCTTCCATATAAATAACAGTGTCTGGAACAAATATTGT
ATATATAAAGGTGTCAAACCAACAACAGCTCAAACGTTGAATAGGTATAGTAATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 419>:

35 **GNMFI11F gnm_419**

40 CCTGATTTTAGCTTTATCGAAAAACCATTAAATTACGAAAGGAGCAACTCGTGAAGAAATT
ATTCAGGATCAATTGGTTTTAGCTGGGGACCCTGCCAATCAGAATTGGTTGGTACGTGAA
AAGGATCTGGGGTCTTTTATTATACCAACAGTATTTAGAAGAAAGTAATCAAAGCCCA
ACACTCATGACGGTTAAAAACAATGAAATGATTGTTAAATGTTGGAATTGGGCATGGGG
CAATCGTTGCTTTCAAGAAAAGCGATTACTGAAAAAATTCCTTTCCAAACGTTAGGTGAA
AAGTATTGGCGTACCTTTAATTTATTAACACGGGGACATTTAAATCCTCCTTGCTTCAA
GAAGTAAACAAGCAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 420>:

GNMFI12F gnm_420

5 CCTACTAGAAGCAATCGCGCAATATCATCGGTATGCAAGCCTGTTGTTGGTTCATCCAGA
ATATAAAAGTTTTTCCATTAGAATTTTATGAAGTTCAGTTCGCTAGCTTCATCCGCTGT
GCTTCCCCACCAGATAAAGTAGTTGCCGGCTGCCCCAATGTCACATAGCCTAAGCCTACA
TCCACAATTGTTTGCAATTTACGATGAATTTTAGGAATATGTTTGAAAAATTCTACGGCA
TCTTCCACCGTCATATCTAAAATATCAGAAATGTTTTGCCTTTATAATGAACTTCTAAC
10 GTCTCAGAATTATAACGTTTGCCATGACAACTTCGCAAGGCACATAGACATCAGGTAAA
AAGATGCATTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 421>:

GNMFI13F gnm_421

15 CCGGGGCTTTCAAATTGGCTAGCTCTGTTCTTTTTTCAGCCAACAGTTGTTCTTGTTTAG
CCAATTCGTCTTTTTGCTTTTCAAGCATCTCAGCTGGAATTCCTGGTTGTGCTCCAAC
GCGCAAGTGCTTGTTTTCCCGTTTCCAGCGCTTGCCGACCTTGGTTAATGTCCGGCTGAG
CCGAATCACGCAGAGCCGCAACCTGTTCTTCTGGCCGATTTTTTCAGTGCCTCTTTACTT
GATTTAAGGCCTGCTCTCTTTTCTTTTCATAATCAGAGGAATACGTATTTTGATGTTTTA
20 ATGAACGAAATGAGATTAGCAATTCGGATACCGTTGACTGTCAAAGGCTTTTTCCGAAA
CCACGCCAAAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 422>:

GNMFI14F gnm_422

25 CCGAATTGGAGGGTAAACCTTTTTCAATTTTGTTAATGCAGGAGAGAAAGTTACTACCG
AAACATTATTAGCCGAAGTTGATTTTGATCAAATTAACAAGCAGGAAAAGATCCATCTG
TCATAGTTGTTTTTACTAAACCTGAACAAGTTAATGAAGTCATCTTAATAGTTATACAA
CTATATATGGTGATTCGTGGTAAAATTATACTTTGACGTAGAGTTAAGTATGTTATCG
GATTAATTTAATGAATAAAAGGTGATTATAGACTGTGAGTTATAGAATTTAAGTAAAT
30 TATATTAACAAAACACCTACTATTATATAAATCAGTAGGGTGTCTTCTACTTATCCGAA
CTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 423>:

GNMFI15F gnm_423

35 CCGTTTTGCAATTTTACTACGTTACTTACCAGTGAAAAACATTTCCCTTATTTAATTCT
TGGTTTTACTGTAACGCTTTACTAGGAACAATCTTTACAAACATGCAACTTTTAGGAAC
ATCTGTTGCGAGCGTTGTGAAAGACTTCAGTGGTGTATTTAACGCACTACCAATGTTAGC
AGTCGCTTTAATTGGTTTCGCTTTAGCCGCAATTAGCTACAAAAATGGTCAAATGATTCC
GAGTGGGCCAGCAGCCAAAAAAGAACATGCAGCGAATGATTCAGACGAAGGAGAGATTGA
AGATGACGAAATCTAATTATAAATTGACGAAAGAAGATTTAAACAAATTAATCGCAGAA
40 GCTTGTTTACTTTCCAAATTAAAGGGGGGTTTTTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 424>:

GNMFI16F gnm_424

CCAGCCATTGCAGTCGAAGAAGTTGATTTTAAACGGAAACAATTAAAGAACCGAACGCA
GTAGTAGTTCCGTTTCTTTCAAAAAGAGGCGTATAAAGGGAGGAAGAAGGAATGGAATTT
GTAATCATTTTGGCTGAAGTCATTGCTTATTGGTGGTTTACTAGGTTTTGCAGCTGGCGCA
5 GGCGCTGCTCGGATGTTTCATGCACCACAAACGCAAGGGTTAGGGGCATTTAGAACATTA
GGAGAAATGAACGCGGCACAAGGAGATCCAGCATCACACTTTTCTTTTGGTTTAGGTTTT
TTCTTTAATGCTTGGGCTTCGGCCGTCGGAGCAGGGGCTTTACACAAGATGTGACCCAC
CGGAATTGTTT

- 10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 425>:

GNMFI17F gnm_425

CTGAAGATTATCATCATGTTAAATATACAGATGAAGCGATTAACGCAGCAGCAAACCTTAT
CCAATCGTTACATTCAAGATCGCTTTTTACCAGATAAAGCGATTGACTTGTTAGATGAAT
CTGGTTCAAAAATGAATCTAACTATCCAACCTCGTCGATCCAAAAACAATTGATAAAAAAT
15 TAGCAGAAGCGGAACAACAAAAACAACAAGCTCCGCAGAAGAAGATTTGAAAAAGCGG
CTTATTATCGTGATCAAATCAATAAATTACAAGCAATGAAAGAAAAACAATCAGCGATG
AAGAAACACCAGTCATCACTGAAAAAGATATTGAAGCCATTGTGGAACAAAAAACTGGCA
TTCCTGTCCGTGACTTAA

- 20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 426>:

GNMFI18F gnm_426

CCTGTGAATAATCCAGCCAAATTAATCGCTTTAACTGCCTTAAGTTCTGTGGGAATTAAC
TTACTAGTTGGCGAACAAATATTGTCAATTATTTACCAGGGGAAACATTTAAATCCTCA
TTTACTCGTTTAGGTATTGATAAAAAATATTTAACTCGTACTTTGGCAGATGCTGGGGCG
25 GCAGTCAACTCGTTAATTCCTTGGGGAGTTAGTGGTACCTTCATTATGGGAACGTTAAAA
GTTGGTGCAGTGAATACTTACCATATGCCTTTTCCCATTGCTTTGTCCCATTATCACC
GTCATTTTGGGGATATTCTTAAAAAACAACAAGGGGAAACAAAAAAGCACCAGGGGACT
A

- 30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 427>:

GNMFI20F gnm_427

CGAGGGACTTTACAATCAGTTGGTCAGGTTGTCGCCAGTGCCAATATGGTCAATGAGAAC
GCAGTTCAACTTGCAGTGCTCTTTAAAATTATGCGGATTGTCTACTCGTAGCAGTTGTC
TATTTATTTGGACGTTTCAAGCAAAGTAAGACGGCAGAATCAGAGGCTGAGTTGGTAGAA
35 GTCACCAAAAAAGCAGCGCCCTACCTTGGTATGTAGTTGGCTTTTTATTGCCTGTGTC
TTTAATAGTTTGATTCAATTTCCCGTCGTGATCAGTGAGACTGCTCATTTCTTTAGTTCT
TGGTTTGAATTAATGCTTGGCAGCAATCGGGTTACGACTCGATTTAAAAAGTTTTTC
CA

- 40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 428>:

GNMFI21F gnm_428

CCGGCGCACCAACTTGGAATGGCCGAGAATATGTACAACGCTTAATCGCAGCTGCAGGTA

TCAAACAAGACTATAGGACGTCATTAGCCCAAGCTCAATTAATTAATTGGTGTATGTTCA
ATGGGCAATGGTTAGGACAAGTAAGTCCATTAAACAGTTGATGAATTTAAAGTTGTCAGCT
CGCCTAAAACAGCTGCTTATGCGTTTGAATTAACCTTTGAACGTCCAGCTGCAGCACATC
CAGAAAGACAAAACCTATGCACAAGCATGGTATGACAAATTCAAAGATTGAAAGCTTCTA
5 CTGCAACAGGAAAAGCTGGCATAGAACATTTGGAGACCTTAATGGGCAAATGGCTTGGA
ATGGGCAATGTTATGCCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 429>:

GNMFI22F gnm_429

10 CGAACTGGTTGCCAAAGAACTCTACCAAGACTCGACTGCAGCAGTTAATCGAACTTTTCC
ATATAAGAGCAACTTTTTACCATTGTTGGCGTGACAACCAATACCAGCGGTGCCATTGG
TCCAGGTAATGATGACTCATTGCTTTATTTTCCAAAAAGACCTATGAACATTATTTCCG
CAAGCTAAAAGATACATCTACGTTGAACTAACAGTAGCACCTGGCTATCAACCAGATCA
AGTATTGAAAGAAACAATAAAAACTCTCTCTCAACAAGGAACCATGAAAAACAGTGGGAC
15 GTATCAAGAATATAATGTTAAAGATACCATCAAAGAAATGGGCTCTTTATTAAATAATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 430>:

GNMFI23F gnm_430

20 CCTGATTACGGTCGTTATTATGATGCCGTTTATGAAACGTTGAAAAATGGTGCACCGCAA
CTAGTAACATAAGAGCAAGCATTAACATAACATCGAAATTTAGAACGAGTTTTCTTAAC
CCAAGTCCAAGTGTTTATCATTTGAAAGAAAACTAAAGCGTATTTAAATGACTTGAAAG
CGCCTGCCCTACAGTCCAGACAACCTGTGGGGCAGGCGCTTTTATTATAAAGAATTGTGA
ATTTTAATATAAGAAACGTATATTGTTAGTAAAAATAAAAAAGGAAAGACATCTTAGTA
GCACACTTCCCCAAGAATTGCTACTAAATGTCTTTTGTGATGCTCGCTCAATTGAAGA
25 GCCTTAAATAGGATAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 431>:

GNMFI24F gnm_431

30 CCCCTAAGTAATGGTCAATTCGGAAAAATATCTTGTTAGGAAATGCAGCACGAATTTCTT
CATTTAATTCGTAGGCAGATTCATAATCAGAACCAAATGGCTTTTCGATAATTAGACGAT
CAAAGCCTTCTTCCGAAATAATATGTTGTGATTTCAAGTGATTAACAATGGTTCCAAAGA
ATTGAGGGGCCATAGCTAAATAGTAAACATGATTGCCTTCTAAGTGGTATTGTTCAATTA
GGCGATCAGATAATTCTTTAAGGTATTATAATGTTCCGTATCATTACATTATGTGATT
GGTAATAGAAATGACTAGAAAATTCAGTTGCCTCTTCGGCCGTGGGATTTAAGTCTTGAA
35 TG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 432>:

GNMFI25F gnm_432

40 CCGGTTCTTTCTAAAGGTGAAAAATAAGGAAACGCCATCTTCCGTTTCGATGACTAGCCAAG
GCATAATTGTTTTTCCCCATGACTTGATCTTCTTTCATGGTCCCGGCACCAAGTTAATAAA
GCGACATTGGACAATCCTTTAAAAATGGGCAAATTAATTTGCACACTTGGTATCGCAATG
GCACCAATCACAGGTAAGTTTTGTTTTCAAATTTGGGCTTTCATCACCGCTTCTGTGCTC
AAGGACTCAACTGAATCAAAGTCAAACGTTGTTTCACGAGCCATATTTTTCTTCACATCA

GCTGGTTTCAACTTGCTAACGGCGTACGAGCGGCTATTTTGTGTAACCACTACGT
ATCTGATTGTTAAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 433>:

5 **GNMFI26F gnm_433**

CCGGCGTAAATAAGAAGAAACCTTTACTTTTTTAAACAACCAAGTACCTATGCCAAATA
CAGCTAATGAAATAATAATGCCAACATACGGATTCATGCGGAACCTCTCCTTTCGCTTT
CTTCGTTGCTGCGGGTCTTTTCTTTTCGAGCATCTTCATATGCAATAAAAAGGCGCC
10 CGTCCAACCAGTTGTTGCTAGTAACGCTAATGTTGCTACTAAAATAACAAAAATAATTG
AACGCCAAATTGTTGCATAATCCCTAAAGAATTAAGTAAAGGAAATCCCTGAAGGAACAAA
TAAAAATGTAATAACCGTTGATAAGCTATTACCTAGCCCTTCCACTTGCTCCAATTTAAC
AACTATTTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 434>:

15 **GNMFI27F gnm_434**

AGTTTATCTTTGGTCGATTTTCCTTGATATATATATAATCTTCAGGAAATGCTCCTGTCT
GTTTAAATTCGGAATTTTCAGAAATTATCTTTTTTGCTAAACTAGTTATAACTGGTTAG
TAAAAAGAAGTATTGGACGAATAGTGCTGAAACAAGTGAATGATCCAAAGTATAAAGAAA
AATGAAACCGATACCACAAGACAAGACTGTTGCTGAAAATGGTAAGTGATCATTCTGCTA
20 AGTTTAGTGCTTAATGTTTAGTTAACTAAGAATTGTTGGATTGTACTTTAGAAAGAAGG
GACAATATGAAGCGAAGTAAATGGAAAGAATTGATAGTAACGGGCATCTGCCATATA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 435>:

GNMFI28F gnm_435

CCCTGTAAATCGTCTTCATATTTTCCATTTCTGTAAGTGCAATAGCTTTAGGATAATC
25 GAAGCTAGTTAAGTAAAGATGCGCATTGCGTACTTGCTTTAAGTCCTGAATCATCTCATC
CACATCTTTAGTTGCTAAAGCTGAAAATAAAATATGAATCGTGTGTTGTGGAACTCTTT
GCGCAAGTTTCAACTAAGCGTTTACTGCATGATCATTGTGGGCACCATCTAAACAAT
CAACGGTTCATCACTAAGACGTTCCATTGAGCTGGCCATTGCGCTTTAGCCAACCCTTG
30 AGTAATGTCTCGTTCCTTTAAATGGCAAATGTTGTAGTTGGCAATACTTGTCAAATAATTG
AA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 436>:

gnm_436

CGGAACGAATGATGCCTGAAGAGCGTTTATTAGTGATGCGCCGTTTATGTGCGAAAGATA
35 CTCCAGCCTTTATAGTATCCAGAGGACTAGAAATCCCCGAAGAATTAATTACAGCAGCAA
AAGAAATGGCGTTTCTGTATTACGTTACCGATTTCACCTTCCCGTTTACTAGGGGAAC
TATCCAGTTATTTAGATTGCGCTTTAGCTGTTTCGGACAAGTGTCACGGAGTTTGTAGTTG
ATGTTTATGGACTTGGTGTGTTTGTATCAAGGAGATAGCGGTATTGGTAAAGTGAAACAG
40 CTTTAGAGCTTATTAAACGTGGACATCGGCTAATCGCAGACGATCGCTCGATG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 437>:

GNMFI31F gnm_437

5 TGACCAAGAAACGGTGGTCATTGAAATGGCGAAAGCAACGGAATTGAATTGGTTAAAGCA
GCAGAACGCAATCCCTTGATCACTTCTACTTATGGTACAGGAGAGATGATTCAACATGCG
CTCAATCATGGGGCAAAAAAATCATTATCGGCATTGGTGGTAGCGTGACAAATGATGGG
GGTGCAGGTATGATTCAAGCACTTGGTGGCGTTTGTAGACAAGGAAGGGCAAGAATTG
ACACGTGGCGGTGGTGCATTAGATAAACTGGCGCAGATCGATTAAACACAGTTTGATCAA
10 CGCATTTTGTACCGAAGTTCTAGTAGCAAGTGATGTGAATAACCCACTAACAGGGCCA
ACAGGGGCGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 438>:

GNMFI32F gnm_438

15 CCGCTTGTCAATCTATCACTTTGGTTGTCTTCTTTAAAGAAGGCAAGATTTCTTCTTA
TAAAGGGTTTGATAGAATTCGTTGATTGTTTATCCAAAGAAGCTTCATACTGATTTGTT
GCTTTGCCCCAGACAAAACCTGAATTTATTGGCATCCGCTTCGATTTTTGTGCCATCAATA
TATAGCGCTTCATTGTCAATTACCTGATTGGTGATTAATTGACAGCGGAATAAGACAAAG
GCTTCTGCTAAAAGGTGAGCAGTTGTTTCTGACTTTGGAAGCGATTGATGGTCCGGTAA
20 CTGACTTGTTCGTGGTTTGTAGCCAACGCATACGATAGCTGTCATCTAATAGAAATCCA
A

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 439>:

GNMFI33TR gnm_439

25 AAAGCATTCTCAAAATTCTCTCGCTATACCGCAGACGGTAAACAAGCCGTTGGCGAAATC
AAACGACATTATACGGCACACCCGCCGAAAATCTCATTATCAAGGGCAATAATCTGATT
GCCCTGCATTGCTTGCCAGCAGTTTAAAGGCAAGTGAACTGATTTATATTGACCCG
CCATATAACACGGGTAATGACGGTTTAAATACAACGACAAATTTAATCATTCCACTTGG
CTGACTTTTATGAAAACCGTCTAGAAATCGCCAAAGAGCTGCTTATGAAAGACGGTTCG
30 ATTTTGTGTCAATTGACGACACCGAACAGGCACATTTGAAAATTTCACTGGATGAACCT
TTCCGGAATGAATCATTTACCTGCACTTTTATTTGGGAAAAAAGACAGGTGCGTCCGA
TGCCAAACAGATAGCGACTATTACATAGTTTGTCTTATGTTACACAAAGAACTTTAAAC
AGTTAAATTAGATTTAAACACGTTTTCATATGATACAGAGAGATACAAATTAAGTGATAA
GTTTGAACACGAGAGAGGC

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 440>:

gnm_440

40 CCGGCAATCCATATGTGATGGGCGCAATTTTAGGTGCTATTATCCCGATTGTTGGTATGA
CACCGTTAAGTTCAATGGTTTAACTGCCTTGATTGGTTTGAAGTGGTGTACCAATGGCTG
TCGGTGCCTTGACTTGTACGGCAGTTCATTGTCAATGCGGCGCTATTTAAAAAGTTAA
AACTAGGCACAGCTTCAACCCGTTAGCTGTGGCAATTGAGCCATTACACAAGTCGATA
TCATCAGTTCCAATCCAATTCTATTACGCAACGAATTTATTTTCAGGAATGGTTAGTG
GCATTGTAGTGACCTTCTTTGGCTTAAAGTACCTGTACAGGAATGGCAACACCGTGGG
CTTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 441>:

GNMFI35F gnm_441

5 CCGACATGTGGTCCATCACCCGAGGATGTAACGTTGCTGGTTGGACATTCAATGCTTGCG
TGCTTCTTCAAAGGCTTTGATAAACGCTCCGCCACTTCCGGCGCAGTAATTTCAATT
CTTAGCTGCCTTGATAATTTATCATCGACATCTGTAAAGTTCGAGACATAATTCATT
CATACCCACGATATTCAAATAACGACGAATCGTATCAAAGGCGATCGCACTGCGCGCAT
TACCGATATGGATATAGTTATACACGGTTGGTCCGCAGACATACATCCGAACTTACGCG
10 CCTCAATTGGCGTAAATACTTCTTTTCTCTGGTCAATGTATTATAAATTTAATCATGC
CCTTTTCCACCTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 442>:

GNMFI36F gnm_442

15 CTTTAAAAGAATTCTTTTCTAATATTGATGAAATTACAGATTTAATAAAAGAAAAGATGG
ATGAACTGGTATTAACTATTGTGGAATACTGCAAATATGTTTCAAATCCTCGTTATG
TCAACGGCGCACATACTACAAATAATGCAAACGTATACGCTATCGCAGCTGCTCAGGTAA
AAAAAGGTTTAGATGTTTCAAAAAAATTAGGTGGAGAAAATTATGTTTTTGGGGTGGAC
GTGAAGGATATGAAACATTACTAAATACTGATATGAAGTTTGAACAAGATAATATTGCGC
20 GTCTATTCAAAATGGCTATATTTTACGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 443>:

GNMFI37F gnm_443

25 CCCGTTTCACTCAATTACAATCTCTACCAACCAAGTAGCGGACCATCTAATTGATTAGG
GCTGGTTAGTTCCTTTGATATGTGAATCAGCGGATTTTACCTTTTATTGAATCCGTTAG
TAAAAATGCGGCCCTTAACAGTTTGCTAAATTATCGCGATCCTTTAGGTACGCACTTTCA
ACGAGCAACCGCTGCCGAATGGCTTCAGACACAAGGCGTTCGGACCAATGCCGAAGAAGT
TGCCATTGTATCTGGTGTCCAGAATGGACTGGCCGTGACGTTAGCCGCCGCTTTTTCTCC
AGGTCAGCGGATTGGCGTAGATCGATACACGTATTCAAATTTTATTGAACTCGCACAGCT
30 TTATCATTTAGAAAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 444>:

GNMFI38F gnm_444

35 CCTGAATTAGTTATGATCATTTCTACGCCAGCTATTAACTTGTGACGACTGTTTCTATT
GAATATGTCATTTTTTTTATTGTTTACGATCTTTTTTATCTAGTGGTAATTGGGGTGATT
GAGTTTATACATTGTTTGTACATTCTTTTTGAAACGAAGAGTGAAACAAATTAATAGT
CTCAAAGTGATAGGTGATAGTTTATTAATGATTTTTGCTACTTTTTTATTTTTTGATTTT
CGTTATGGTTTAGAATTATTTCTAGCAAACCAATTGTGGAGTATCTCCTATATGATTCCT
ATCATTTTTTTTCTAATAGTGGTATGTTTAATGCTTATTAGTATAGGCCTATTAAGAC

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 445>:

GNMFI39F gnm_445

CCTTCAATTTTACTGTTTAGCTTAAGCTGATTTGAATAGAGTATCAATTTCTTCCCACG
GGGAAAAGTCGAAGAGACCAATTTCTCTCGACTTTCTTTGTATAAAGCAGAAACAACTT
CGATTCCCTTAAATCGTTACTGCAGCTGTATAGGTGGACTGAAAGTTGTTGCCATAAGGAA
5 GCTTCCCCTTCAACTGTCGGTGATCCTGTTCAAGAATATTATTGAGGTATTTGCACTTCC
AATGCTTCACTTTTGGTATAGAATTCCTTCTTTTCCAGCTCTTTGATCGCTTTAATG
AAGGAGCATATTTATCTGTTACAATGGAACGTGGTTGACCGTAGACTCTGATTAGACGCT
TGAAAAAGAGCTTTA

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 446>:

GNMFI40F gnm_446

CCAGAAATCATGACAATGTGAAAGTATCGTATGCCTCATTGGAACGCTATTTAGAAGATA
TTCATCGCATGGTGGAAAATGGTTTACTTTCTGAAGAAAAGAATTTATGCGCCTGTGC
GCTTACGTGGCGGGAACAATGTCTGATCTGCCTAAAACAGGTATTCGCTATATCGAGT
15 TCGCTAATTTAGACTTAAATCCTTTTTCACGTTTAGGCATTGTGGAAGATACTGTGGATT
TCTTACATTATTTTATGTTGATTTATTGTGGACAGATGAAAAAGAAGCGGATGAAT
GGGTGAAAACCTGGGGATATTTTAAATGAACAAGTGGCTCTTGGTCATCCTCATGAAACGA
nTTAA

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 447>:

GNMFI41F gnm_447

CCTCCTTGGCATGGCAACTACTGGAAGTATGGCAAATACACAGTGACTTTAGAGCCAGG
GAAGGCCCTCAGCTAACGAAACAATAACTGTCGTAGCGAAAAATGCAACAGGAAAAGAAAG
TCAGCCAGCTACAGCAACTACACAGTCGACTTAGCCACACCAACCATTGATTCTATTAC
25 CGGAAATTCTAGTAAAGGTTACGAAATCACTGGAACGGCGGAGCTAAAAACCACTATTGA
TGTCCGTGACGACGACGGAACCATCATTGCTGCTACAACGCTAACGAAACGGCCAATA
TACGGTGACTCTACCAGCTGGCGTAGTGACACCAGGAGAAACGATTACGATTATTAGCAA
AGATGGCGCAGGTAAATGAA

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 448>:

GNMFI43F gnm_448

CTGCTTAAAAATACTGTTTTAGTGAGTTTAGGTACGAATGGTCCTTTTACAGAGGCACAA
TTTGATGAATTTATGAAAGCGTTAGGTAATCGAAAAGTTTATTGGATTAATGTTTCGCGTC
CCAACTAGAAGATGGCAAAATCAAGTGAATAGTTTACTTAGTCAAATGGACAAAAATAC
35 GATAACTTAACGGTCATTGACTGGTTAATTATAGTAACGCCCATGATGATTGGTTTTAT
GATGACCGAGTTCACCAATGTGGCAGGTGGCGAGCAATACACACTTTATCGCGGAG
AAAATTTTACAGTAGCAAGAACTTCCAGCTCAGATGAAAGGGGCTGGAAGTTTTTTGTT
ATAGGAAAAGCAAAT

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 449>:

GNMFI44F gnm_449

CCGTGGAAAACCTTTTGTAAAGCTAGAGCTAATAGATAAACGAATCGAACGCACATTAT

5 TTCGACAAAAACATTTTGAGCGGTTTTGGGCTACTCTTAAGCCTTTAGAGCAACAATTGC
TCATTAGGCGATTCAAGTATAAAGAAGAGGTTAATTGCCCTCACAGGCTTATAGAGAGCG
TATTAGATGAGATTGAAGAGATAGAAACAGCTATTTGTTTGATGGAAAATATAGAATTAG
AAGAAAACGAGCTTTCCGACGATGTAGAAGAACTTAGAGAGGATGTGTGACTTCTTG
CTTTATGAACGTATCCGTCCAGAGTTTCATCTTGACGCTGGATATATTACGAAAAGCA
CG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 450>:

GNMFI45F gnm_450

10 CCTGATCCTAAAAACGGCTTTGTTTATAGCTTCCTCATCGTTGAAACAATTCAAAATGGT
GCAGAAATCTCAGCGGGGAAATTAGCACCCAATGAAGTGTACAGCTGTGGATGAT
TATACATTAAAGGTGACGCTCAAAGAGCCAAAACCGTACTTACGTCCTTGTTAGCTTTT
CCGACATTTTCCCGCAAATCAAAAAGTAGTCGAACAATTGGTGCGGACTATGGAAC
15 GCTAGTGATAAAGTCGCTCTATAATGGTCCGTTTCGTGGTAAAAGATTGGCAGCAAACAAG
ATGGACTGGCAACTAGCAAAAATAATCGCTATTGGGATCACCAGAACGTGCGCTCAGAC
ATTATCAATTATACA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 451>:

GNMFI46F gnm_451

20 CCCCCATTTTAGAACGGATCATGAATCAATATCAAGAAATAGCTGCGGCTTTACGCCAAG
CGTTGCCGCAAATTTTCCGCAAAAGAATCTATCGGAAGAGGAAATTGCCTACATGGTGC
TTCAATTTTGCCAAATCTTTAGAACGGAGTCCCAAATATGGAAGTTGATATTGCTGGTT
TTTCTCCTAGCGGTTTGGCTTCGACAAGTATGCTGGAATGCGATTACGGCGCTACTTTC
25 CTTTATCAACCAGATTCAATTTTTTTCGGATTGCGGATTTAGGTAAGGTGAATGTTGAGG
AAAATATGACTTAGTGATTTCCACTTCGTTATTACCAGGATACAATGGTAAATATAAAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 452>:

GNMFI47F gnm_452

30 CCCGTTGCGCTACTTGCTGATGTTGCTTCCTTAGCGCTACTTGCTACTGTCGGACTACTT
TCAATCGTGATTGTTTCCGCAACTGCGGTCGCGCCAGAAAAGGCGTTAATCACTAAAGAA
CTACACAAGCCAATGGTTGCTAATCGTTGCCACTTAGTTGCTTCATGTCGTCCTTCTT
TCTCTGGACCATTCGACAAGACCAATCAAGACAAGACCAAGAATGCTCAGGTTGCTTG
ACTCTTGCTTCCTGTACGAGGGAGCTGCGAGCCAGCTGTGGTGGTCTGTGTCGAACCACC
35 ACTTCGTTGATCTCCTTGAGAGGACCAGCTGGTTCCTTGGGATCCGCAGCTGGCTCATC
TGTTTTCGGTGGGGGGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 453>:

GNMFI48F gnm_453

40 CCTAAGATTTGGCTTATGAGCTTGGGACAGCGCTTAAAAACGTTTGCTCTTTGCTGATA
AGTCCATTTTTTTATAACGGAGGTGGCTAGAGTGAAAGCCTGTGGCATTATCGTGGAATA
TAATCCCTTTCATAATGGACATCGCTATCATGCCAACAAGCTCGCCAACAAGCGGACT
GATAGTAGTGATTGCTATAATGAGTGGAATTTTTTACAAAGAGGAGAACCAGCCTTACT
AGATAAGTGGGCCAGAGCAGAAGAAGCTTTGCAAAATGGTGTGGATTAGTCATTGAATT

GCCGACAGCTTGGTCCGTACAGTCTGCGGATTACTTTGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 454>:

GNMFI49F gnm_454

5 CCGGAGCGAGTACCCAAAAATCGCGTGGGAACCTTTGCTGAATATATTGCAGTGGATCAA
GCGGCTGTAGCTATGAAGCCGAAAAATTTAACGTTTGAAGAAGCTGCGGCCATTCCGTTA
GTCGGTTTGACAAGTTATCAAGCGCTACATGATATTATGAATGTACAGCCAGGCCAGAAA
GTCCTGATTCAAGCAGGTTTCAAGAGGGATTGGAACCATTCGATTCAATTAGCAAACTA
10 GCAGGCGCTTACGTTGCCACCACAACGAGTAGTAAAAATAAGAATGGGTTCAAGCGTTG
GGAGCAGATGAAGTGATTGACTATCGGACACAAAATTTGAAGAAGTTTATCCGACTAT
GATTATGTGTTTGATACAATGGGGGGGACAATCTTAGAAAAAGCTTCTCAGTGGTTAA
CCTCAGGGAAAAGTTGTTACATTGTCAGGCATTCCCAACGAACGTTTGTCTAAAGAGTAT
GGCTTGCCGCTTTGGAACAATGGGCCTTTAAATAGCTACCCGCAAGATTG

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 455>:

GNMFI51F gnm_455

CGGAATTGTATTTACTGCAGAGACAGTTTAAGGAGGACACGCAATGAGCAAAGGTCCGTT
AGTCACTCGGACAGAGCTTCGCAAACGCAGAGAAGCAGAAGAAAAAGAACGGAACGTCG
20 TCAGCAAGAAGAGCAGAAGCTGGCGGAAAAAGCGTATAAGCGAAAAGAAAAAGAAATTC
GACGTTTTATCGTAAAGAAAAGAAAAACAAAACCGATCAACAAGTCACGAGTAGGAGA
ATACTCGAAGCGTCGAGAACGGAGTACTTGTTTAAACAAGGCAATTATATTGTAGCGAT
TTTATTAGCCGTTGTGGCATATATCGTTTTGAATTTATAGAAAAGAGGAATCACTATGAA
AATTGGAATTATTGGAGCAATGGATCAAGAGGTCAAATTTCTAAAAGAAAAATTGACAGA
CAGGATGTCATGGGAACGAGCAGGCGCTTTATTTGTTTCTAGTTCGTTAGGAAGACATGA
25 GGTGATTGTAGTTCGTTTCAGGAATTGGTAAAGTGGCCTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 456>:

GNMFI55F gnm_456

CCGGGGTTGAAGGTGTACATGGAGAAAAACAAGTTGAGAAAAGTGGGCTTAAGTGCCTG
30 GAATGGCTAAACAACATCCAGAAATTAACAACATAAAGAATCAAGTCTCTATGAACAG
TTGTTTGCTAGTCAGCAATGGCAACAAGCACAACGATCGGAATGATTGCGTCGTTACCG
CTAGAATTATCAACACAGCCAATTTTCGAACGGGCCATGCAAGAGAGCAAGCAAGTGGCG
GTGCCGCGAACATTAAAGGAGGCAAAATGCACTTTTATCAAGTCTTCCAGAGACGGTT
TATGATACCAGTGCATTTGGCGTGAAGAACCTCCGTTAACAGCGGCAGAAATAACAGCT
35 ACAGCGATTGATTTATTGATTGTGCCAGGGATTGTTTCAATCGTGCTGGCTATCGAATA
GGCTTCGGCGGTGTTTTATGATCGAATTTGGTACATTTTCGGGGCATTTCATGTAGTT
TAGTTTTACGTGACACTCCCATG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 457>:

40 **GNMFI56F gnm_457**

CCGGAAGTTCGCTGGCCTTGGCACCCACGAAGAATTACTTACTTCTTCTAAAGAGTATC
AAGAAATCGTTGCGTCACAGGAGGAGGATACCATGCAAACTAAAAAATTCATTTTGGTG
CCTTCTCAGTTTTAAGCCGTATTTACTACGCTATCCAAAAGAAATTATTGGCGCCTTAA

TCCTAGGAATTCTCAGTGGTTTTTCGACTGTCCTCATGACTTATTATATAGGTAAATCCG
TTGATACAATGGTGGGTAAAGGACAAGTCAATGCTGCCCAACTCATCAAATTTTAGGTT
TATTAGCAGGGATTTTACTCGTAACCGTTCTAAGTCAATGGCTGATTCAACGTCTCGGTA
ATCGCGTGTCTTATTTATCGACCACACAGCTGAGAAAAGATGCCTTTGCCCATTTAAATC
5 AATTACCGTTAAGTTATTATGACCAAACGTCACACGGAAATATCGTCAGTCGCTTTACCA
ACGATATTGACAATATTCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 458>:

GNMF157F gnm_458

10 CGCGGTCGTTTATAAACCATTAGAACCGTTAGACACACCAACGATTCAATTTTGAAAAATT
ATATGGACCTGATCAGAACGGGCATATATTTATCGAATAAACGACTAGTGATTCAATCA
TGGAATGAGGTTTGAATATGGGAAAAGTATTGAATAGAATCGGTCGACTTATTTATTAG
TTACAATGATCGGCTCGTATACGATGTGGGTCGTAGGAATTGATGCGCCAGTCACAAAAT
ATATGTATGCCAATAGTTCAATTTTATTATTAATAGCAGTAATACTTGTACTGCTATTAA
15 ATGTATGATATTAAAATTTATTGACTGGCTGACCGTAGCGTTGGCGCTAGCAACCTGGC
TCTTGTTCCTTTACGGAATCAATCCGTCATAGCACGATGCAAACAGATACAATGATT
CTTTAATTATTTTATTGGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 459>:

GNMF158F gnm_459

20 CCTGCTGTGCCGTTGCGCCAGAAGGAAGCATCAGCTAGAAGTGCGTCAATTTTTCTTGG
AAAACAGACCATTTTTCTCAGGAAATTTTTTCAAAGCGTGTTTTGCCGCTTTTGCA
AAATTTTTCAAACAAGCGAATCTTTTTCTACGTTTGATGAGCGACATGGGTGTTAAAC
AAGAAAGTAACAAACGGTCCATGAACCTTCTTCAGAAAATAATGTTGATAAGCTATCTTAT
25 TTTTGATTTGCCATAATAAATCCCCCTTCTAAAAGTAAGTGTAGCACAGGAAATCGAAT
GTTTAAAACAATATGTTCAATAAAAGAAAACGCTTCAACTAATCTCAATAAAGGACTGTT
AATGGTGTTCTAATAAAAGTTTTATAAAAAATATAGCTGAAACTCATGATAAAAAGGCA
CAAACCACTATCTTACGTTATGCCAATTATCCCGAATTGGTATGTTCACTTACTCCT
ACCAAGAGTACATAA

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 460>:

gnm_460

ATCTATAATTCCTGAATCTCAAAGATCAATTATTCCAGTTAATCTATTATTGCCATCTAA
CAATAGATGATTACAATAAAATCATTATGGCATAATCACTTTTTACCCTCAAAAACGT
35 TGTTGCATTTAGTCTTTCCATAAACTATCTATATAATCTTTTTCTATATCAGTTAAATC
ATTATAAATAGTTTCACGCAACAATATATACTCTTCTAATACATTTTGTTTATTATCAAT
AGTACATTCCTAATATCTGTATAATCTAAACCGTGCATTTGTCTTAAAAAAGTGGCAAT
ATCTCGTTCTTTAACAATTTTGTCTTCTTCTGACATAGTAGAATAAATTTCTGGTGTTAA
AAAAGTTCCTTTAATTTCTTTATAACCTAGTATAGATAATTCATCACTAATATACGAATA
40 TTCAATATTAGGAATTTTACATTAGTTTCTAAATTTGTATTTAAAAAATTATATATTGC
TTTTTCTTTGCATAACCTTTTTCTTATTAGTACTAAATTTGTTTTAAAAATGTATTCT
ATTATTAATAAATATGCCACACTATCATAACCACTACCGATTATTTCAATACTATCTAC
TTTGAAATTATCAAAGTAATGCTCAATTAATATTTTCAATGCCTTAACATTTGTGGCATT
ATCATCATATCTATATCCATTAAATAACAATCTTCTTTTTGCCCTCGTGTAAATTCATG
45 TTCTGGCAAATCTTCAATAATTCTAAAACAGATTTTGGTATGCCCTTATTGCTCTATG
GATTATTTTATGAGGGACTAAAATAACTGCATTAGCATTCTTTTCGATTTTCAAAAATT

CAAAAATCAATTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 461>:

GNMFI60F gnm_461

5 CCTGCAAAGGCTCTTACTTCTTTGATGTCTTTAACTCCAACCTATGCCCTATCACATT
ATTAAGTTTAGCACCCCTTGGTCAGTTATCCCATCTAAATGATCTAAAAAATTAGAATAA
TTTTCTTTTCTAAAGCTTCTTGCATGTTTGTCTTGTCTAATACGGATTTTAAATCGAGT
TTAGTTGCACTAACTTTGGATGATTAAATTTAATACCCCACTGCTTACTTGCGAATTCA
10 TCCAATAAATCACCAAACATCTCTTCATACAATTTATCTATGTCATCGCTAATTTTCAGGA
ATAATTGGTATTTTCAGTACAACGGCAACGTCCATGATACGGTGGATGCCAATCATCTTTA
ATCTCTTTCCATGACGTCCACCACAAATAGAACAAACACGCTCATCTTCTGCCGACCAG
CTTTGTGTTTGCTTAACACCTATATCCTTTAGCGATTTTCTTACACCTTCTACCGCAAAA
TGTGAATATTCCGTTCTAA

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 462>:

GNMFI61F gnm_462

CCGATTAATAATTTTATTCAAAAAGCGCGTCGAGCAACAAAAACCATCGGACTTGGTGGC
AATGGTCAGTTTTTTCGGTTATCAATGATTACCGAACCTTAGGCTATCAGCCTTGGGGA
AATGCTTTGTTGGATGACTATGAGTTAACCATTAAATTAATGCTGAAAGAGTTATCGATT
20 GCTTATATTGACGAGGCCTTTATGGCTCAAGAAGCACTGAGAGATGTGAAACGTTTTATT
CGTCAACGnGTCGTTGGGTTCAAGGAAATTTAGATTGTCTAGCGTATTTACCCAGGGTGA
TTAAATCAAAGTCATTAACGCTAAGGCAGAAGTGTGGAATCTATTATTTTTTAGCGCAAC
CCTTTATTAATCTCGTAGCGGGGATGCTCGTTTTTGTCTTAACTGGGCTTCAACTGCAAC
ACTTGTATAGGTTAGGCTTTTCGTTATCGCTTGTCATTAGTTTGTGTTTGGCCGTCAGTA
25 TTTTCGTTAGTTTTTCGGCATTTTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 463>:

GNMFI62F gnm_463

CCCGGTTTGCAAGCTGCGCAATGCTTAACGTTAGAAGAAGTAGCCAAACAAATGGCTGCT
30 GAAACAATCGATCAATGCCTGTTGCCCATTTAGACAGCAGTAGAACAATTCCCACGAATT
GATTTATCAGATGAATTGTATCAAAAAGTAAAAAATGGCATGCGTTTGCACAAAAAAGAA
TTAGGAATAAAGGCAATGCCAGAATCCTTAGTCGCCTTATTTTACCAAAATCAAGTGGTT
AGTTTATACATGCCACACCAACGCATGATAAATTATTGAAACCAAGTAAAGTTCTACGG
AACAATTAATAAAAAAGGAAGTTTTTGCACATGCAAGTTATTCAACTACATCATCC
35 CTATGAACCCAATCAAATTCCTAATGAAGAAGTCGTGATGGTCCTAGGCTTTTTTGACGG
TGTTACAAAGGCCACCAAAAAGTAATTGAAACAGGTAAAAAGATTGCGGAGGAAAAAGG
CTTGAAGTTAGCTGTGATGACCTTCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 464>:

40 GNMFI64F gnm_464

CCGAGGGGATTGGCCTGATGGAACGGAAAAACAGGGGCAGGGACATCCCGCCCGGATAT
ACGTTAAAAATTTTATCTTGGAAACCGGAACCCACCGCGCGGTTTCACTGCGGAAAATC
AGCAGTCAAGACCGCTTCCAGTGCCGCGTCAAGACTGCTGAAAAACCGCAGTCTGCAC

CACGGGAAACCAGCGGTCAACAGTGCGGCATTTCGCCCCCTAATAAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 465>:

GNMFI65F gnm_465

5 CCGGATCTAATCCTAGTTGTCCAGAAATGTACAACGTATTTCCCGCTAAGACAGAATGTG
AATAAGGTCTACAGTAGCTGGTGCCTGTGCAGAATTAATCATTTTGTGTGTCATCGTTT
TCCTCCATTCTATGATTCTTTATTTTCAATTAAAGTCCCTGTTTTCCAGATAATCCTTC
TTTGGCTTTTTCTAATAACGTAATCAATGTTTTTCGACCTGGCTTAGATTACAGCAAACCT
AATCGCTGCTTCAACTTTTGTAAACATTGAACCTGGAGCAAACCTGACCTTCTTGCGCATA
10 TTGTTTCATTTTTCTGTTGAAACATCCCTAAGGCTTCTTGATTTTCTTTACCAAAT
AATACAACTTTTCAACTGCTGTTAAATCAGGAGCAGATCAGCATCCACTTGTTCAGC
CAGTCGTTCACTACAAAATCTTTGTCGATGACTGCATTGACACCTTTTAGTCGGTTCCC
TTCTTGAAATGACTGGGTATGCAC

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 466>:

GNMFI66F gnm_466

CCGAAGAAGCTTTTTTTGAACCCACATTGACAAATTGCTCAATTGCCTGCGTGGCACCGCC
ACGGTTATCCAAGAGAAGTTGCCGAATATCTATGCTCAGTGGTTCGATCAAGGACAAAC
20 GATCGAATGGCCTCGTTTCAGCAAACCTTTCAATTTCTTTTGTGGAAATGTCCAATCTAA
AATAATTGCCCCATCCACCATTTTTTCAGGAATGATAAGATGTGACTTTTACCGCTGCA
GACAATCATCTCATAATCAACAGTGCTAAGCCTTTCTTAATTCCTCCAACAATTCACC
ATAAAACTACCGCCATAATCAGCCAAATAGACACCAATAATATTGGTTTGACGACGTTT
TAATGTGCGAGCGGGCATGTTAGGAACATAGTTTAGCTCTTCAGCAATTGCTTGGATGCG
25 CGTTTCGTGTTCTTCAGTTACCTTTGAACTACCATTCAATGCGTAAGAAACGGTCGAGAT
TGATACGCCTGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 467>:

GNMFI67F gnm_467

CCCTTGATTTTAAAGAATAGATACAGTAGCATAAGAACAAGTAGTTCTTCACTGGCAAT
30 CGTCAATGTCATATAGAAAAGATGCCCTATCTGTATTATCTGAAAAATCAAACAATCAT
AACCAATTAGAAAGGTGGTTATTATGTATAACTTATTAACCAACAGGAAATTCAGTTAC
TTCCCTAATTGAATACTTGTATGACAGTAAAGAAAAAGTCCCATGCAAGTACTCCGAC
GAAAATATGAATTTTCCATTACAATATCAACAATTTATTGAATCAATTAACCTTTGTTAA
TTTCTCGAGTCAATACACATGAAAATGTACATATTTCGTATTATTAATAATCAACAGTCCA
35 TAGAATTAGTCGCGGATGAAAATATCCCGATTGAGTTAATGAAAGAAGCTGTTGTCCGCG
GGTCACTAACCTATATGTTAGCCAGGATTTACTTTTAATACGCTACACTTCAGCCAAAG
ATTTTTGTGAAGAGCCTTTATTAACCTTTTCTATTTTAAACAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 468>:

40 **GNMFI69F gnm_468**

CCAACTAGAAGAAGAAAATCAACTATATCAGCAATCCATTAAAAAGCTAACGGAGCAATT
ATTAATGCAACCAATGAAGTGAAGCATTACAAAAACAAGTAGTCGAAAAAGATGTTCA
ACTTAAACATGTTAAAGAAACATTAAGTGATAAAGAAACAACCTATCACTTCTTTACAGAA

5 ACAATTGTCTGAAGAAAAGATGCAACAGAGACAGACCAGTGAAGAGAATTTAGACACAGC
CGTTACGCTTTCTCAAAAAGAAATTGGCGAAGTGTATTAGAAGCCAAACGTCAAGCAAA
AGATACAATTAGTCAAGCCAACCAACAAGTTGCAACAGTTCATGAAGAAATGGAACAACG
TTTAGCAACTTTTACACGCATGAAGCAAGTGGCAAGATAGTACCAAGCTTATTGTGAACA
AATGCAGACAATCAAGAATGAATCAACAGGAACGTACCAACAGATAGAGCAGTTATTAGC
AG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 469>:

GNMFI71F gnm_469

10 CCGGTGTTATTCATGTTTGATTATTCGAAAGAACCAGTAAATGATTATTTCTAATCGAC
ATGAAGTCTTTTTATGCGAGTGTGCAATGTATAGAAAGAAATTTAGATCCATTAAACA
GAACTTGTTGTTATGAGTCGAGGTGACAATACTGGTTCAGGATTGATATTAGCTTCTTCT
CCTGAAGCAAAAAGCGGTATGGTATTACAAATGTGAGTAGACCACGTGATTACCACAA
CCATTTCTAAAACACTACATGTTGTTCCACCACGTATGAACTATATATCAAGCGAAAT
15 ATGCAGGTAAATAATATTTTCAGAAGATATGTGGCTGATGAAGATCTACTGATTTACTCG
ATCGATGAATCAATCTTAAAGTGACCCGATCACTGAATCTTTTACGACTGAAGGAACA
CGAAGCCAACGTAGAAAGAAGCTCGCTCAAATGATCCAAGAACGTATTAAGAAGAGCTA
GGATTGATTGCTGCAGTAGGTGTCGGAGATAATCCCTTGTTAG

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 470>:

GNMFI72F gnm_470

25 CCGGCTCCAACGTACCAACTGTTTTGAAATGATTGATGATGCCAAAGTAATTCCTGGTT
TAACCTTAACAGAACTGTCTCTTTAACTATGCGATGGAAGAAGAAATGGCTTTAACAC
CGTTCGACTTTTTATTGCGACGGACCAACCACTTATTATTATGCGTGATCGTTTGGACCA
AGTGAAAGCGGGAGTCATTGAAGAAATGGCACAGCATTATCAGTGGACAGCGGAAGAAAG
AGCACGACACATTGAACATTAGAAAAAGTAATTGAAGAATCAGATTTAAAAAATTTGAA
AGTAGGGTGAAGAAAAATGGGAACCTCGATGATGACACAATTATTCGGTGAATTTTTCG
GAACGATGATTTTAGTTTTACTAGGGGATGGCGTCTGTACCGCAGTTAACTTGAAGAAAA
GCAAAGCCTTTGCTTCTGGTTGGGTGCTTATTGCTTTAGGTTGGGGCGC

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 471>:

GNMFI73F gnm_471

35 CCCGTCTTAAACGGCTCTACACTAGAGAGGTATGTTACAGCATATCTCTCTTTTCAATGC
TATTATAGCACAAACGACCATCAAAAGACCATCAATAAAATGCCCGAGCCTCTTATTTT
CTAAGGCTCGGGCATTTTTATTTTAGGGGCCAGTCACTAAATCCACGTGACGGCGGCTT
GGTATTGTTGGCCAGCCATACCTTGGTTGGCTGGCACTTCTAGTTTGATGTTAGCAAACG
TGAAGTCCAACGTATAGACGTCACTGCCTGTGAAGTGTGTTGTTGCGACCACCGCTGTTG
CGGTATTGTCGGCGGTTAAAGTCACGGTGCTGGTCTTGCCAAGTGGTGTCTGTTTCTG
TTGGTTGGTTGTAATCGGTAAAGCTGGCAGCAGCGCGCTTCCCTAGCAACAAGCGGGTCG
40 TTGTTGGCAAGCTGTCTGTGGCTGATTTTGGTTGCAATAGCTGGGCCGTAAACTCCAAT
TGGCTTGGCTAGTATTACAGCGTAAATTAGGGTTGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 472>:

GNMFI75F gnm_472

CCAGACACAGAAATTGAACGCAATATGATTGAAACGAGTCAACTTGTGAGCCGTCTAAAA
GAGAAGTAGGGGTGTGCAAGCAAATGAACTTAGAAGGATTAACGACAGAAGCCAGAAATG
AAGCGACTAAAAAGATTGACCAAGTGTCAACATTAGAAATGGTAACTTTAATAAATCAAG
5 AAGACCAAAAGGTAGCACAAGCAATTGAAAAGGTGCTTCCGCAGATTGCTGCAGCAATTG
ATGCAGCGGCAGAACGATTTAAAAAAGGGGGCCGTTTAACTCTATTGTGGTGCAGGAACGT
CTGGACGTTTAGGTGCTTTGGATGCGATTGAATTAACACCCACATATAGTGTGTCGCCAG
AACGCGCATTTAGTATTTTAGCTGGTGGTGAAAAAGCAATGTATCAAGCAATTGAAGGCG
CTGAAGACTCGAAAGAATTAGCTATCGAAGATTTAACGCAACATCAATTGACTGCCCGAG
10 ATGTCGTAATTGCGATTGCTGCTAGTGGTCGGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 473>:

GNMFI77F gnm_473

CGGAAATAATAGGGATTCTCTGCTTTATTAATGTTTATTTTGCTCCTACATTAAGTA
15 AAATAAGTCCAATAGTTGATCATACTGCGGGTATCACAGCAATCCGTAGCCTTTATTTT
TTTTATTAATTATTCCTATACTTAGCGCACTAAGAGGGTATTTCAAGGTCTAAATTATA
GTTTTCTTTTGGTGTTCCTCACTACTAGAACAATTAGTTCGAGTAGTTTGTATTTTAG
TAGGAACCTATCTAATTATAGTTCAATTTAATGGTAG

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 474>:

GNMFI78F gnm_474

CCCGGTCAAGTTTACTTAGCAAAAGTTGTCCGCATTGAAAAATTGGTGCCTTTGTTAAC
CTAATTAAAGGCAAAGATGGCTTGATCCATATTTCTCAATTAGCAAACGAACGTGTGAAC
AACGTTGAAGATGTCGTGAAATTAGGCGACGAAGTCCTTGTCAAAGTAACTGAAATTGAC
25 AAACAAGGCCGTGTCAACGTGTCAAGAAAAGCGTTATTAACGAAGAAAAACAAAGAAAA
TAATTTCTTTTAAACCAACGAAAACCAAGGAAGCTTCCTTTCTTTTCGTTGGTTTTTTC
GTTGAAAACAAGCCCTAAAAAAGAAATGATAAAAAAGCTAAAGACGATCGCCAACTCTT
TTGTTTATAGTCAATTAGTGGTAAAATTAATACTATCAGTCTGAAGAATATCTGGGGTGT
CTTTGTGAAAAAATTTAATCCAAATAAAAAATATAATCATTACCTTAATTTTAGTCATTAT
30 TTTAGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 475>:

GNMFI79F gnm_475

CCTTGTTAAAGTTAAGAATACAGCGTTGACATCATCCATTACCCCATAAAGTAAAGCGAA
35 TAATGAGATAACCACAGATTGTGTTAACACAACGTTACGAGAAACGCCATATTTATTTTC
GCGATGGAACCAAATTTGGTGGCAATAAGCCATCACGAGCAACTTGAATAATTGTTTT
TGATGGTCCAGTAACCAAGCAGATAATTGTAATAACACCTAAGAAGACCATGAAACT
AAAGATATTACCAATAATTGTTGGTAAACCTAAACGTCACAATAAAGCAAAATTGGTTG
TGTAATGTTAGACAATTCCATTTTGCCATTGGAACAATATTAGCTACATACATTGCATT
40 AATCAGCTTTAATAAACTCACCAATTAATGACATGAAAACGCCTTTTGTAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 476>:

-770-

GNMFI80F gnm_476

5 CCTGGAATTTGTGGTGCATGACTTTTTAAACAATCGTACTGCCTAATTTTGCTTGTT
GGCGCTGGTTATTTGCCAGTGTTTGTGCTCGATAGGTAAGTGACTCAAACGTTGCCATT
CCATTTGATGAGGTGTGAAAACAACTTTTTCAGGATAGGTAAGGGAAAAATGCTTTGGC
10 TAAACAGGGTAATTGCTGAGCCATCGATAATTAACCATTGTTGTTTTTGATGTTGGGCGA
GTACCATCTTTAATATTTGTTGTGTCAGTAGCATCTAAGCCTAAACCTGGACCAATTA
TAACATCCGCTTGCTCTACGACGTTTCGTGAGAAGGACTGTTCTTCAAAGCCACGACCA
TCGCTTCTGGGCATCTTGCATGTAAAGGCCCGTTATTTTAACATCAGTAATCACAGTGG
TGAGACCAGCGCCACTATTGATACACGCTTCGGTACTCATGATGATGGCTCCGCATATTG
15 TCGGTTTCTCCGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 477>:

GNMFI81F gnm_477

15 CCAAAATTTTGGTAAACTAAAAGATGGAAGTATTGGGGTAAAAGGTGGTTGGCGAATTTA
TTCAAGCGGGCCGGGAATTTATTTAAATCAATTAATTACAGCTGTTTTAGGGATTTCGGCA
AAAGGCCCAAAGTGTAGTTTTTGTATCCCATGTTACCAGAAAAATTGTCTGGTTTAACACT
AACTTACCAATTGTTTGATAAACCTGTCACATATAAATTTATCCAAATCAGTCAGCGAA
AATAGTTATCGATGGTCAAGAGGTTCCGTTTAAGTTTGAAGAAAACCTTATCGAGAAGG
20 GGAATGGTAGTTCAAAAAGACGAGGTGCTTTCATTATTAATTGAAGCAAGTGTATTGA
TATTTACCATTAGATAGGAGAGTAGTCCATGGTAGGAATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 478>:

GNMFI82F gnm_478

25 CCCGTTCTGTTTTATTTTCGATTGCTCATATTAGCAATTCGGCTCTTGCCCGCAAGAACT
TGCTTCCATTTTCGAAAGCTCTGCTTAAAGATTTCAATCTCTGTTGCTCAACTTCTA
CTTCAGAAACGCCAGCAGCATCAACAGCTTCCATTTCTTCTGTAATCTTCTTGCTTCT
CTTCTTTTTTACTCACTTCAGCAACTTCCTTTCTCTTTATGCATCTACTTCTTATCCTAA
CAAGGTTTGCTTAATTACCTAAAAACGGTAATAGTCACCTAGTTGTGAAGCTAGCTCAT
30 GTCGAAACGTGTCTACCAAACCGAATATTTTTGAATACGGCATACTGGTTGGTCCTAGCA
GGCAATTGTTCCTTTGCCATGTCTTGATACTTCATACGTAGCAGTGATCATGCTCATAT
CTTCTAAGAGATTGTTGCCAATTTCTGAGCCGATACGAAAAACAATTGGATTTTCTGTTG
TTGCAGAACCATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 479>:

GNMFI83F gnm_479

35 CCTGCCCCATTTCGTTTACCGACCCACCGGCAATAATTAAAGCTGTAATCATTGATACA
AAATCCTTTCTCTAAGTAGTCAACCACTAGTTTTATTTCAATTTTGTTTAACTTATATAT
TCATCAACACAGCCAAAACCTGCATTCAATCTTTTACATTTTCTCATAACTATCAGTAAGT
TTCAATAATTTATCGTAGACCTTAATCGAACTGTAATGAGAGTGTAATAATTTTGTGT
40 AAATGAAAAAATCCATACAAAAAGGAAGTCGCTTCTGTAGAATAAAGTTAACGACAACC
AATTACAGAAAAAGAGGACTTCCCTATGAATGATTTTACTACAGAAATTGTGCAAACTCT
AGTCACTAAAGGCGATTAAATGAATTATTCGGTTCGCACTTAGAAAAAGCGATAAACAC
ACTCTACGGACTGAATTAACGGCTTTTTAGATTACGAAAAATATGATCGCACTGGTTC
TAATTCAGGTAATTCGAGAAACGGTCTTACTATCGATCAATCAAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 480>:

GNMFI87F gnm_480

5 CCGGGAAAAAATTCATTCTACAAAATAAAAACGTTAGAAAAGCCATTAGTTATGCAAT
AGACAGAAGTAATTATGCTAAAAACATTTTAGATAATGGTTCTATTCTGCTGTTGGTGT
TGTTGCTAAAGACGTTGCTTTTGATCCTAGTACAAAAAAGATTTTGCTAACAAAATGTT
GGTGCAATTTTGATACAGAAAAAGCGCAATCCTATTGGAATAAAGCGAAAAAGAATTAAA
TATTAAAGAACAAGTAACCTTTAAACATTTTAACCAATGAAGAAGAAACAACAAAAAGC
10 AGCTGAATACATTCAAGGACAATTAGAAGAAAATCTAAAAGGTTTAAAAATTACGATAAC
ACCAAGTTCTGCAATGTACAAATAGAGCGAGTTATGAAACATGATTTTACTATTAGTCT
AAGTGGCTGGCAGGCAGATTATCCTGACCCTATGAGTTTTTTAGGTAACCTTTGAAAGTTA
CAGTGTGTTGAATTTTGAGGGTATAGnCATACTAAATA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 481>:

15 **GNMFI88F gnm_481**

CCGGTGAAATTTACCGAAATAAACATATTCTGCTTGATACATGATATTGCCTAATTGAA
AAGCGTCATTTACTTTGTCCTTGTGTTTGTACATAAGTGTGTATGGAATTGCTGTATTCC
AATAAACTTAGCTAGCCTGTGTTGATCTTGTTCGAATAATTTAGCAAATGGCTAGCAA
TTTCCGTATTAAACACAAATAATTTATCTTTATTTAAACGGTCTATCTCTATTCTAAAA
20 TATATGGATCGTCATTCTAGCTGCAGCAATTCATAGCCAAGACAACCTATCTTCTCAA
ACATAAAAGTAGCACATCTAAGATCGTAGCCTTTCCACCCGTAAGTATTTAGAATAGAAT
AGGTTTGCTGATTAAAGAGCGTATGGTCTGTACCTGTCTCTCTTTTAAAGATCCTTTG
CTTTTTTTACTCCTACTAAACCGTGTCTTCTAATGCTATTGATATTGGACTTATCTGTTA
AATGAATTAACCTATT

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 482>:

GNMFI89F gnm_482

CCAGCGCTGCTTCTTCGGGATCAGGCGTCGTTAAACCAAACCTCTAAATGTGCGCCGTTAG
30 TTCCTAAAAAAGCTTTGTAAACGAAATGTTGTAGCTGTTCCATACTAGTGGCACCAA
TGATTGCTTTAGTGGAGAGCTTCAAAGTACCACCAAGCATAATAGTGGGAATTTCCATAT
CGCTAAGTTTTGCAGCGTGATGCACGGAATTCGTCACTACATGGATTTGTTTCCCACTA
AAAAAGGGATCATTTCTAACGTGGTTGAACCAGCATCTAAATAGATCATATCGCCATCTT
GTACACAATAACGGCTAAAGAAGCAATCTTTTGCTTTTCGTGCGTGTGTTTGGATTGATT
TTTCCGTCATGTTTTGTCAAAGCCTAAATTAAGAATACGCTTAGCGCCGCGTGAATGC
35 GTTCTAACAAATTGGCGTCTTCTAATTCTGTAAATCGCGCGGATTGTGGATTCTGAAG
CATTGAACAAGCTAGCAAGTCTTGCGATTTGACGACTGATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 483>:

GNMFI90F gnm_483

40 CCCGCACGTTCTAAATTTACGAATTTCTCATTGGTTAAAAGCGGTGCTTCTTTCACT
TCGTGCTTATCAATCAGCTGGAATTTCTCTCCGCACGTGGCCGAGTTGGGCACGAACT
TTTGAAAACCTTACAACGTCGTCTGTAATCGTCCATTCTCCTGTACCTTCCCAAGCCTGC
ACTGCTCGAGGCGCCACGTAATTATCAGCCAGTATAATAATTCTTCTTTTCAATTCA

AAGGTCGAAATATTGTCTAAACGAGGTTGAATAATCGTCATTGCGACGGTTTCAAATTCG
TAAATAATGTCGACTTATCCACCGCACCAAGCGCATATAACATCAGTTGAGGGTTTAAA
TACGCATCAACAGGAACACCTTTGCCGTATTTCAAGTCGATAATTTCAATCGTCTTATCT
GATAAGACAACCACGTCCGAAGTTCCAAATCCTTCTGGGACCCATTTGAAAAATCTACT
TTTTGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 484>:

GNMFI91F gnm_484

10 CCCAAAGTGATTTAACGTTTAATTCAGCGTGGGCGTTTAATCCTTCGACCAATGGTTATG
CGTTAGGTTTAGCAATGATGGACGGTGAGCGCCGTGAACTTGTAAATTTTGCCAAAG
AACAAAAGAAAGATTGGCAGGCTGTCCAGTACAACTCGAGTATATGTGAATCATGACG
GCTCAGACAGTGCCCTTGCTGAAACGTATGTCGAAAAGCTCTGATGTGAATCAATTAGCTG
TAGATATTTTGGTACATTGGGAACGTGCAGGCACTAAAAATGATCCCAACGAACAAATCA
15 AACGAAAAACAAGTGCGAATAATTGGTATAAGAGACTGTCTACAGGTTCTATGGGGGCAG
GTTTCAGCCAATATTGGTGGTGGCAAAATTGATGTGTTAGAACAATGTTAGGGCAAACAG
TCAATGGAGGTCAGTGTTATGGGGGCACTTCTTATTATGTTGAAAAGATGGGCTTCAAT
CTTTAATGAATACAGGGCATATGTTTGCCAGTGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 485>:

20 **GNMFI92F gnm_485**

CCTGCCCCGAGAATGTGGCGGAGGTATTAAAATTGCGCCTTAGTTTGTCTAATTCAAGCAC
GAAAAAATATCTGATGATGGATAATGCACGTTGTTTCAAGATAATCGCATTATGGCATT
ACAATTTTACGGTGCCAAACCGCACAGGACGGTGGGCAGGGCGATTATTACAAGTACAGAA
25 CTTGCCTAGAACTATTTAAGTGAAATTGATTTTGGCCGTGAGCTTGTGAAAGCAAAAGA
TGTTGAAGGCATCGAATTAATGTATGAAGATGTGCCAGACACATTGAAACAATTATCCG
AACAGGTTTAGTTGCCAAAGAAGGGCATCGGTTTCATCGTGTCTGACTTTTCAGCCATTGA
GGCCCGAGTGATTGCTTGGTATGCCAAACAAGATTGGGTATTAGAAGTATTCCGCACACA
CGGCAAAATTTACGAAGCAACAGCGCGCAGATGTTCCATTTAGGCGAAGTGACGGACTA
CGACTGGAAAAGCCACGAAGGTAAT

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 486>:

GNMFI94F gnm_486

AAGAAAATTTATTTATCGCTAGTACGATCAAAGAACGGGATCGAAAAGTAGTTCTAGCCG
AAGCTTTCCAGGTGTTCCAATTAGAACCTGCCTTACTTGGTCGTTCCCTTTACTTCTTTTA
35 CGACTTTTGAAAAAATTACAATGCGCCTAATACAACCTTTTGCTTTCAAAAACAAGTACGC
TCGTGATTGATGACATCTTTTCTTCATTAACGATTGGACAACGTCAAGAAATTTTACCTC
AATTACCACTAGCAGTTCAACCAAGAAACAAGCGCTTGCTATTTCTGACAAAAGATCCAC
AAATTCTTGATAGTCCCTATGTGCACCCCTGTCTCTACATGCGTTATTAACTCAAGAA
AACGTCTGGCACTGATTGCTACCAGACGTTTTCTTTACGTTCTCAGTAATTTCAACATCA
40 GGAAGTGAATAATAAACGTGGCGACTTTACCAAGTTCCTCTCAACATTAAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 487>:

GNMFI96F gnm_487

CCGCTCATTAAATAAGAACAGGTTCCGGGTAGTAGTATAGAAGATGCTCCAATGTTTCGCTTG
AAATTCTGGTAAGATATCTGCCAGTGAATAGGATAAAGTATCTTTGTGTCGGTGAATAC
CTTATTTTCGCTATCTAAATGATACATGGCGTGAATAAGTTCATGAGATATCGTGAAATT
5 TTTTCTTTTTTCGCCCATGTTAGAAATTATAAGCTAGCGTAGTCTCGTAATCATCTTTAAT
AATCATACCTGATATAGATCTACGTGCTGTTTTTCAAATGGAAGGGCCTTATTTTAAT
TGATTTAGATGTTAATATTTTCATCCCAAATATATCTATGCTCATAATTATTAACACTCAT
TCCCAAACATAACATGTGTGCTGAAATAAATTCGTTAATGGTACCGCAAAGTTAAGGTA
CTCGTCTACTTCTACTGTCATCCTGAAAACCACCTTGAATTATTCACTTAAATTTTCT

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 488>:

GNMFJ77F gnm_488

CCGGCTTCTTCAGGCCAAATCAGCCTTCTGCGCGAGGGGAAGACGTTTGGAGTTGGTTTC
CAGCTGCGGAGACCACCAGCCAAGCAGCAGTGCAGCTTTCGCGGTTATGAACAACCGGAA
15 ATGGTCAAGAAACGGCCTGTGCTCGTCATAGCGCGAAACAGGCACAACGGCAAACCTGGTA
ACGGTTCGTACCCTTAAGCAGCACAGAACCTGTCCCTTTGGCGGACTACCACCACAAATG
AGTGGAACCCCTTACCGGACAAGCCGACATCCAATGTTGGGCAAAATGCGACATGACG
GCAACAGTCCGATTGGCAGGATTAGACCGATACAAACCCAAAGGGTGGCACCCTGCATT
CCAATAATCAGTGAAGAGGATTTTCAGGCGATTAAACAGCCGTTGCCAAGGCATTCAAA
20 CTGTACTAGAATAAAACCGTTCCTTAAAGGGGCTTGCAAGACTATTCTGAAATATGGGC
AGCCGCGCACGGGCGACAGGCGATGACAAGCCGTCCGTGCGTTTTATGGGGCGCGGAAT

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 489>:

GNMFJ87R gnm_489

TATTGGCTTCATTTAATGCTCCTGAAATCCAAGCGGTGCTGCTCAAATTGAAGATTGA
CCAATAAATTCCAAATCAGCAGCACACCGACTGTGATTGTGCGCGCAAATACCAAGTTG
AATTTAAGACTGGCAGTCCGGTATGACCACGATTGACCAGTTGGTGGATAAAGTACGCG
AAGAGCAGAAAAAGCCGCAATAAGTTGAGGATTGAATGAGTAAAGGCCATCTGAAAATAG
GATTTACAGACGGCCTTTTGTATTAGGCTTTATAGAAGAGATGATTGCTTAAAGCCTTAT
30 GGTTTTAAATCAGAATATATAGCGGATTAACAAAA

25

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 490>:

GNMFK22R gnm_490

CCGAAGATGATGCTGGCTTTGCTTCTTATGGCCCGGTGGTGTTTTACAGGAGGACGG
CTTTGGGTAAATTCGCCTTGTACGAGCAAGAGCGGCAGGTAGTCTCCGGGCAGGCGCAGGG
35 CGACATCCTGCATTTATTTGCGCGAGGAAAACAAGACGAGCGTGCCGATGGCTTCGGTGG
GCGAAATAAGCTTGGGCAGCCATTCGATGACGGCGCGGTGTGGGCTTCGGGGTCTTTAG
GGCTGGCGTATATAGGGGGGATGTAGAGTTCGCCCTGTTTTTCAAAGTCAAAGGGGCTTT
TAAAGGCGAAGGTAGTGGTTTCAGGCAGCCATTACAACCCGGTTAGCGCACATACAAGT
40 TGAAGTTACCCAAAGATTACAGG

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 491>:

GNMFL05TR gnm_491

TACTAACTCTGCTGTCGTTCTTGCAGTTACACCTGCGACAAACAGTTCAATGAGTTTATT
TGTTTATACCGCTTAGACGACTTTTTCTCATAAGGGCAACTCTAACTTAATTTGGATTT
CCCTACTTATCTATGAGAGCCCCCTGTTTTTAATTGACTATAATCCGCTATATTGTGAGA
AGCTGGATGAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 492>:

GNMFL42TR gnm_492

CAGCTCGGTAATAATTACGAATTCGAGCTCGGTACCAGATTCCCTGTCGGAGATGGAGGA
GTTTGACCGCTGATTCTGCTGATACGCAAACCTGTATCAAATATTGGACGGGCAACATAT
CCTCTCCAGAGTAACGGTTTGCCTTCACCACCAAACCGGCGCGACCTGATTGCCTTGGA
TAAAGCGGCTGCCGGTTGCGATTGCGCAATGTTGCGCGCCCAACGTTGGCTCATCTACAC
GCAAATTGCGGAACGCCTTGCCSGTTCGGGCGGCGGTTTACGGTTACGGTAGAAAGCGT
GTCCGCCGCCTGTCCGGAGCTTGAAGGACGCTATCTCGAGCTTGTCCGCCGCGCCGCCGT
CTCTTTTCGGTTTCACGCAnAGATGGGAAAATCCGGCAAGCGGGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 493>:

gnm_493

CCTTTCATTGCTGCTGGCGGTTTCTATGGGTTTCGGTATTCATGGGCGCACTGACCTACA
TCGGCAACGCACCGAACTTCATGGTCAAGGCCATTGCCGAACAGCGCGGCTACCGATGC
CGACTTTCTTCGGCTATATGATGTGGTTCGGTTCCTGACACCCGCTTTCATCGTAC
ATACCCCTTATCTTTTCGTTTTCAACTGCTGTAAACGCTATGCCGTCTGAACATTGAGA
CGGCATTTTAAATTCGGCATAATCAAATCAATATCCCCCTTCCGACAATTTATAGTGG
ATTAACAAAAATCAGGACAAGGCGACCAAGCCGCGAGACAGTACAAATAGTACGGAACCGA
TTCACCTTGGTGCTTCAGCACCTTAGAGAATCGTTCTCTTTCGCTAAGGCGAGGCAACGC
CGTACTGGTTTTTGTAAATCCACTATAAAATCTAAAGAAACCTTTTTTCCCGATAAGTTT
CCGTGCCGACAGGTCTAGATTCCCGCTGCGCGGGAATGACGAAATTTCAAAGTTATGGC
GTTATCGGAAAAACAAAAATCAAAGCCGGAGAATTTATCCCAAACAACCGGATTTCAA
AAACCAGATGCCCGCGGGAATGACGGATCTTAGGCTCTGTTTTTGTTCATAGTGGA
TTAACAAAAATCAGGACAAGGCGACGAAGCCGAGACAGTACAAATAGTACGGAACCGAT
TCACTTGGTGCTTCAGCACCTTAGAGAATCGTTCTCTTTCGCTAATGCGAGGCAACGCC
GTACTGGTTTTTGTAAATCCACTATATTTTTTCAGGAATGACGGTTTGGAATTGCCCGA
AACCCAAAAACAGAAACAGACAAACAGGTTTTCCGCCAAAGCCGGCATTTCGCACTT
TGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 494>:

GNMFP26TF gnm_494

CCGGGTGGATGGTATGCGCACGGATGTTTCTGAAATAATCGCTTACCGTGCTTGTGTTGT
TTGCACCGGTTGCTTGCAGATAATCGTGGGTAATGCGTTTCGGCGGCATAAGCTAAATCCG
CCTGCACATAATACGGGCTGCGGCTGCCGTCTTCACTTCCGCTGCGCTGCGGAAGATA
AGACAACAGACGAGAATAGAAGAGAAGAGAAGAGAAGACAAGAGAAGAGAACAGA
ACAGAATAGAACAGAAAGTTTTTGGGGGCTGGATTCATTTTCGACTCCGTATTTCGGTTT
TAAGTATTAAAGAACTTTTCAATGATCTTGCAGGAGCGGACTATACCAGGTTTGT
GGCGATGTTTCAACACAATATA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 495>:

gnm_495

```

5  CAGGAAGGACGCGGCATCGGGCTGATTAACAAAATCCGCGCGTATCATCTGCAAGACCAA
   GGTATGGATACGGTTGAAGCCAATTTGGCACTCGGGCTGCCCCTCGATGCCCGCGATTTC
   CGTTTGGCGGGGTTGGTGAATCTGATTGCGTGCGGAAGCACCCGTTCCGATTGCGTGCG
   GAGCAAATGGCGGCACCTTTATGTACCGTTCTCGCTGTTGAAACATATAGGCAGATAAAAA
   AGCCGCCCCGTTGAAAAGCAGACGACTTATGTTTTGTGGCACTAATTTGTCCCGATAAGCA
10  TTAACATATAAATTTATTTATCATTATTGGTGCGGACGGAGAGACTCGAACTCTCACACC
   TCTCGGCGCCAGAACCTAAATCTGGTGCGTCTACCAATTTGCCACGTCGCGATGGGAAT
   TGGACGATTATACAGATTTTGTTTTTTGTGCAAGGTTTCGGCGGGGCTGTTGATGGCT
   TGGGGTTTGGGGCGGTAATCTGTTTTCTGTCGCTGACATCGGAATCGGGCGGTTTTT
   TTGTTTTTATTGACGGAATTTGGGTATGCCTGCTGCTTTGATTAAGGATTTTCTGCTGAC
15  TCAGGGTTTGAAGCTGCCGCTTGACGAGGTTCCGGCGGGCGTATCTGACGGCGCAGACGGT
   AATGGATATGGGGACGGCTTCGATAGACCGTTCCGGTTTTGTGGCGCAGTGATGAGGGTTG
   GAACTTGCCGATTACCTGTCGTGCCACAATGTCCGCGAAGATGCACTGAAACGGCTTTT
   CATGGCTTTGGATTGCGGTGTTTTCGCGCTCGACAGGCGTGCGGAGTGCGGCGGTCTATGC
   CTTGATGCCATCTGAAAACCGAGGCTTTCCAACCTGATATGCCTGTCCCGACAGGGCGAGGT
20  TTTGGAACCTGTGGGATTGGATGAAGCGGCAGGCAAGGTTTCGCTGGCTTGCCGTTTC
   GCGCAAAGCGGTTGGATGAATGTTGCCTCGGATGTACGCCGTTGGCTGGATTGGGGGA
   GCTTTCGGGAGAAC

```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 496>:

GNMFP92TR gnm_496

```

25  ATCAACAGCGCGCGTATTTTCGGTCAATCCGCGCAAGGCTTTGACAAAGGCTTCGGTC
   GGGCGGACGAGGTTCAATATGCCGACGAAGGTTGACAATCACGCGAGGCGATTTCAATG
   CCGTTTTGAGCAAAGGCTTCTCGAGTTGGGCGATATTGTTGTAATCGATTACCAAAGTG
   TGTTTGGTAAAGTCGGCAGGCACACCGGTGGAAGACGGGTTGCCAAACGTCAGCAGACCG
   CTTGCCGGCTTTCACCAAGTATGCTGTGCGGAAT

```

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 497>:

gnm_497

```

35  CCAACATACAGGCCGCTGTAGAAACATGGCGGCAAATCGGATATTTAGTCTCCACTATA
   AAGAAGCAGGGGGCGGACTGTCAATACTCAACGCCTGAAAACAACCGTAAAACAGCCTGT
   TTCCTGATAGTCTATCATGCCGAAAAATCAATTCGGTGTCATTACTTTAGGGGGATTTTT
   TCCATATCGCACGATTGCCGTTGCACAAAACAACAAACACAACGGCAAAGCCCCATACC
   GTACCGGCAAGAAAATATGATAAATTATAAACAATGTTAGCCACCCGACACAGACCCAC
   ACCGACCCGCCATGAAATTACAACAATTGAAATACGCCTTAGAAGTTTACCAGCACAACC
40  TGAACGTTTCCGAAGCGGCCGAAGCCTTGTTTACTTCGCAACCCGGCATCTCCAAACAA
   TCAAAATTGCTGGAAGAAGAAATCGGCATTGAGATTTTATCCGAGCGGCAAGCGCGTGG
   TTTGGTCTCGCAGCCGGGCAAGGTGGTTTTGGATATTGCGGGACGTATTTTGCAGCATG
   TTCAAAACAT

```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 498>:

gnm_498

CTTGCCGATTAAGTGGGTATAACGTTTCGTGTTTTCAGGATTGACGGCAACGGCAACGTCGCC
CAGCAGCGTTTCAGGACGGGTGGTCGCCACGATAACGGCTTCGGCGGGATTGTCCGCCAG
CGGATAGCGGATGTGCCACATAGAGCTGTGTTCTCCCAcgtcwGACGACCTTTTCGGTT
5 TCAACCAATCCCTGCGCTTGATTATTGGTAATAATTCCTATTTAATTCATTTGTTAGACA
ACTCGTTCCTATCCAATCATGAACACCGCCGCCATCTACCGCCAGTACCAAACCTATGTC
CGCTCCGATAAATCCGGCTGGGCGTTGGACGGCTGTTCCGACAGCGCGCTCATTTGCGCAG
GCAAAACAGCCCGGTTTGCATCTGGAAATGTGCATCAACCGCTTCGATTTCGGGCATCACC
TTGTGCGGGATGCGCGCGCGGAACGGGCGCGTTTCCACCGAAATCCACAATTTTCAGC
10 CACAATGCGCCTTGTTTCGTTCATGGTGTGCGGGCAGAACCGGTTACAAATGGGCGGCAGG
GAATACCGCCCATCTGCCGGCGAAATCTGACTGGTACGCGGCGATTTGGCGGACGTATCC
GAAACCCTGCTGCCCGACAACAGCGGCATGTGCGCGCTGCATTGGATTTTGTGCGTGA
AA

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 499>:

GNMFU01F gnm_499

CCGCCATTAACACTGGGTAAAGTTAACAAACCAGTTGGGATAGCAATGGTGTATTACTAT
TTCTTTTTTTCGCTAATTTCTTTGTTTTAAATTGGGTCAATCTTTGTAATTCACCTAGAT
TACTTTGTGTCAGCATTAGATAACCTAACATGGTATGTTCCATCAGATCACTTTGTAAAA
20 ATAAGTTCACCTTTTCATAATCAAGTCCTAGTGCTAATAAAGTTTTAACAAAGTTGCAAGT
TGTTATCTTTGAGCATTGTTGGTTCAAAATCAACAGTAATAGCATGAAGATCAGCAACAA
ATAAAACAGTTGGTATTGACTTTGGAGTTGTTTTAACCTTGCATTACG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 500>:

GNMFU02F gnm_500

CCCGCGTTAAAACTTCCTTTAAAGTTTCAATTTGTTGTGAACCCCCCTTAAGCTTAAATT
CACTTGCAAGGTTAACCTTTTAAAGATCACTAAATTAATTTGGTTTAAATTCAAGTTTT
TATTAGAACTTTAAAGTTTCTTTATGAGTTACTACTATTGTTTATCTTTGGTTAATT
GAATATCAATTCAATACCATCAAAATCAAAAACCTTGGGCTGCTTGAAATGCTAATTTGG
30 TGTTTTCTGGTGCAATAGAACTATAACCGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 501>:

GNMFU04F gnm_501

CAGTGAGTTTTTTTTGACAAGAACTCATGGGCTTTTTGTGGATCAGAGCCAATCTGAACA
35 AGCTGCTATTAGCTTTTGAAATTTATATCAGGATTTAATTATTAACAAACTTTGTATCCC
TGCTTTTGTGGTTTGAAGAGTGAAAGTGAAAAATTTGCAGGTGCTAAAAACACATGGAC
AATAGAAGCAATTATGCCTGATGGACAAAGTTTACAATGTGCCGGGTACCGAGCTCGAAT
TCGTAATCATGGTCATAGCTGTTTCTGTGTGAAATTGTATCCGCTCACAATTCACAC
AACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCTAATGAGTGAGCTAACTC
40 ACATTAATTGCGTTGCGCTCACTGCCGCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTG
CATTAATGAATCGGCCAACGCGCGGGGAGAGGCGGTTTTCGTATTGGGCGCTCTTCGCT
TCCTCGCTCACTGACTCGCTCGCTCGGTCGTTTCGGCTGCGGCGAGCGGTATCAGCTCAC
TCAAAGGCGGTAAAACGGTTATCCACAGAATCAGGGGATAACGCAGGAAGAACAATGTGA
GCAAAAGGCCAGCGAAAGGCCAGGAACCGTAAAAAGGCCGCTTGCTGGCGTTTTTCCAT
45 AGGCTCCGCCCCCTGACGAGCATCACAAAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 502>:

GNMFU07F gnm_502

5 GGTATTTGGTCCATTAAAGGTGAGAAGTTATTACGTATTATTAACAAAAAGGGTGATGTTT
AAATCAAATTCATCTTTTTGTTGTTGATCTTGGGAATTATTTTTTCAATATAACCATCA
CCATTAATAATTGTTTGACAGATTTTAAATGGTTTTTCACTCCACACTCCGTTAATG
TTAATGTAAGTCCGAACTTACGTGGTTTTAGTTTAACTGCTGGATATTTCAATATAAC
GGGATAATTTTAACTGCTTTTTATTTGTAAATCTTACAA

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 503>:

GNMFU08F gnm_503

15 CCAGAACTTAGTTTTTGAACCATGATCATATAACGATGGTCATTAGGTGGTTGTTATTG
CAACCGAAACAGATAGTTCCCAAATTAATTTTCTAAACGGTTCTACTAATCAAGGTACAA
GTTCTCTTAGTTGAGGAGGTACCTTGGGTACCACCATCAGACAGGTGCAAAACCGTTATT
CTACTTATCCAAACGGAGTTAAATTTTAAATTTGGAATGATATTGCTCCTGGTTCAGTAA
AGTGAAACCCATATGCACGTTTTCTGTGGTGGATAGAAAAACGAAGTTGCAAGTCAGG
20 GTACCGAGCTCGAATTCGTAATCATGGTCATAGCTGTTTCTGCGTGAAATTGTTATCCG
CTCACAATTCCACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCTAA
TGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCTTTCAGTCGGGAAAC
CTGTGCGTGCCAGCTGCATTAATGAATCGGCCAACGCGGGGAGAAGCGTTTGCCTATT
GGGCGCTCTTCGCTTCCTCGCTCACTGACTCGCTGCGCTCGTTTCGCTGCGGCGA
GCGGTATCAGCTCACTCAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 504>:

GNMFU09F gnm_504

25 TTAAATCGGAAATCATCTAAAGTATAGACAAAAAGCGATAGTCATCAAACCTTATTAAC
GCTAAATTAAGTAAATCAGTTAGTGAATTTTTCAGTTTTCTAAAGCTTGATTGTTTGA
CTCATCAAGTAAACAGTTTTTCATAATTGATTGATTCTGAGCTAAACTTTGATGGTTT
AAGTTATTAATATTTTAGTAATTAGATCGCAGTTCTCATTAAAGCTCAATAATTAAATCA
30 TGCACATCTGTTTCATTTTGAACACTAATTCAATGGCTTAAATTGTTGTTTTTAAAGC
TCATTTTCTTTTCATATTGTTGAATTTGATTACGAAATCATCAATATTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 505>:

GNMFU11F gnm_505

35 CCAAATTTAATGTACTAATTCTGTTAGATAGATAAGAATTGGCTACTAACTCCACCTCCT
ACTAACAACATTTTAGGGGCAAATTTTTTAATTGCATTTTTAACATGATCAATGTAATGA
TCAATAATAGTAGCTTGAAAATTGGATGCTAATTCACCTCAATCAATTCGGGTTTTATTA
GCACCTATTGTTTAAATCTTGTTTAAACACTGAGATTTAAACCAGAATAGGAAAACCTTA
40 GTTCACCTAGTAGAAGGTTTAAAGAAATAGTGAGGTTTAACTAATTCTTTATTAAGAA
CTATCAATTTTACTACCAGCAGGATAATCAAAGCCCATTCCTGCTATCTTGTCATAA
ACTTCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 506>:

GNMFU12F gnm_506

5 AGATAAGAAATACAAAATTCTCATTGAACAAGAGTTAAGTAATCCCAATTTTCTTAGTTA
TGAAAATGACGAATTAAAAGCACAATGTCAAACCAAAGAATTAAGTGAATGATTAGTTCA
AAAAAGTAAATCTTTTCATTTTTTGGATGAATAATGCTGGTTTTAAAACTTTAACTTCAT
TGCACTTTATCCTATTGATAAAATGAATCTAAATAAAAGTAAAAGCTGTAAGTGTTC
TCAATATGATAAGCAGTTTGAACAAAGGTATTTGCAACAGAATTTATCCCTATCCACAA
10 GATTAACCAACAGATCGATGATGTCAGATTATTGGGCAAATCTTTGAATTA AAAACCCA
TGAAAGTTTAACTGGTAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 507>:

GNMFU14F gnm_507

15 CCCAGGATTGGCAATTTTTATGCCTGGTTGCATCTTACTTTCCTCGGGTTCTTTTAGAAG
TTATATCCCACTCCTAGTTTAAAGAAATACTGTTGGTAATCACAACAGTTATGTTAATAA
TACTGTCCCTAAAAACAATTTTTATGAAAAGTTTATGATCTAATTTTGCTTTAAATTT
CACTAATCAGAAAACCTCAAGAGTTTGGTACTGGTTGGTTAATTGACTGAAAAGGAGATGA
AACTAAAGATCTTAATACATTAATGTTATCCGCTCACAATTCCACACAACATACGAGCCGAA
20 AGCTGTTTCCGTGCGTGAAATTGTTATCCGCTCACAATTCCACACAACATACGAGCCGAA
GCATAAAGTGTAAGCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGC
GCTCACTGCCGCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCC
AACGCGCGGGGAGAGGCGGTTTGCCTATTGGGCGCTCTTCGCTTCTCGCTCACTGACT
CGCTGCGCTCGGTTCGGCTGCGGCGAACGGTATCAGCTCACTCAAAGCGGTAATAC
25 GGTTATCCACAGAATCAGGGGATAACGCAGGAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 508>:

GNMFU15F gnm_508

30 ATCCTTATAGCTATTTTCGACGAGATCCAGCTATCACGGTCCACTAATTGGAATTTACCC
CTAATCACAAGTCATCCGCTATCGTTTCAACGAGAGTCGGTTCGGTCCCTCCAGTTAATGT
TACTCAACCTTCAACCTGCTCATGACTAGCTCAACCCGTTTCGGGTCTATGATAACAAAC
AAACGCTCTCTTAAACTCGCTTTCGCTACAGCTCCCATCTCCTGGTTAACTAACGCTT
GCTATCATAACTCGCCGGCTCATACTTCAAACGCACGCCATCACACATTAATGTGCTCT
GACACGTTGTAGGCATATGGTTTCAGAATCTATTTCA

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 509>:

GNMFU16F gnm_509

40 CCGTGAGTTGTTACGTTGTTTTAAAAGTGATTCATTAGCTTTACTGAAAGCAGTTTGCT
CAAGGTTAACTGGTGTGTTACGTTCCAGTTCTAGCTGAGCTTGACTGTGCTTGCT
TTTGGTTTTGCAGCGCTTGAAACCTGTTATCAAGTTCTAGTTTGACCTGATTATTTTTT
CAGCTAAGTTGTCAGTTACGTTGCTTAGCTTCAATTTGTCTAAATCTTGGTCCTTTT
GGAGTTCAAAAACCTGATAGTCTTTTTGTAGATCACTAAAAGCAATCTTTAGTTCTGTTT
CCTTTTGGGTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 510>:

GNMFU19F gnm_510

5 TTTGCAAAACAACCTGAATCAACAAGTACAGCTTTGACAGTGATTTACCTCAA
CCAACCCCTTGACCAACCTTCTTTAGATGATCATGTTCAAGTACAACCTTTGATCACCATGAA
GAGCTCAAACAGTTGCTGAAGAACAAAATAATTATCAAGTTGGATTTGATCAAGTTCAA
GCTAATCTTGATAATAATGAGGAAATACAACCAACTGCTGAAAAAAGTAACTACTGAT
TTTGAAAGTAAACAAG

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 511>:

GNMFU23F gnm_511

15 CCTGACAACTAAATCAAAGTGAAAGATATTTTCGCTTAGCTTCAGGGCAAATTTTTTA
AAAGTTAATTTTGATAAATGTGTTTTTGCAAGTACAAAACACATCATAATCTTGCTTTA
GTTCAAAAAAATTTTCGAATTATTCGTTGAAGATGAAAGATAAATTTAGTTTTCAAAA
AAACTATGATTTCAACTTAGTTAGTGATGGGCTTTATGAAATTTGAAATAATGCTGGTTT
TTTTAAACCTAAAGATAAAAACAATTCTTTACAGCAATTCTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 512>:

GNMFU25F gnm_512

20 CAGGGTGGTTTTTCTTTTACCAGTGAGACGGGCAACAGCTGATTGCCCTTCACCGCCTG
GCCCTGAGAGAGTTGCAGCAAGCGGTCCACGCTGGTTTGCCCCAGCAGGCGAAAATCCTG
TTTGATGGTGGTTAACGGCGGGATATAACATGAGCTGTCTTCGGTATCGTCGTATCCAC
TACCGAGATATCCGCACCAACGCGCACCCGGACTCGGTAATGGCGC

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 513>:

GNMFU27F gnm_513

30 ACCTGTTTCAAGTGAAAGTTGGTAGTTGTGTTCAACTGAACTAATTGCATTTCTTCTAAC
CTGAGCATCAACTTGTCTTTTTCTTTGGCGGGTTTTGGCTTGCTCACGGTTTTGTTCAA
GGTGAGAGTAACAGAAGGTAATCCCCATTAAACCAATCAGGACTTGTCATGTTGTCAAG
TTCCTAGCAGTTTTATCATTAGTGTTTTTAGTAATGTTTACAGAAGAAAAGCCCTGAAT
GAATAAACTGTTAGCATAACTTTTTCAACA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 514>:

GNMFU30F gnm_514

35 CCAGCCACTAGGTAAGTTAACCAATAGTGGTACATACTGGGCACGGGGCAAACATCGTGT
TAGGATCAATAGTTCAGTTACTGGTAAGGTGAATAACCTATTAAAGTCAATCTGGTTAC
CAGGTTTAAAGCTAATTTTTTCAGTATCACTATCACTAGTTGCTCCCTGGCCATTGATAA
GGTTAAACAAGGGGAGTAGATACTACGCCAGTTAGTTTACCATCCATCTTGGTAAATGTAC
TATCACCTATCCCTATTTCACTCTTATTGTTTTGTTTACTATCAAAGAACTTTTAAGGG
40 GTACCGAGCTCGAATTCGTAATCATGGTCATAGCTGTTTCTGTGTGAAATTGTTATCCG

CTCACAAATCCACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCTAA
TGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCTTCCAGTCGGGAAAC
CTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGCGCGGGGAGAGGCGGTTTTCGTATT
GGGCGCTCTTCCGCTTCTCGCTCACTGACTCGCTGCGCTCGGTTCGTTCCGCTGCGGCGA
5 GCGGTATCAGCTCACTCAAAGGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCA
GAAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGCCGCGTTG
C

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 515>:

10 GNMFU31F gnm_515

CCGATCTGAAGGCTTGGGGATTTTGTAGTGGAGTTGAAAATATGCGAGACACTTAGAGT
TGAGGATGGCTAACTCAACCCCTTACAGTATCTTTGATTATTTAAGGGGATTGGTTAC
TGTTATTGATGAATCACACCAAACCTTACCGCAACTTAATGGGATGTATAACACTGATC
15 TTTCAAGAAAGCAAAGCTTAATTGATTATGGTTTTTCGACTCCCATCTGCACTTGATAACA
GACCGCTCTCATTTGCTGAATTACAACAAAAATGCAAAAAGTTATTTATGTTTCAGCAA
CTCCAAGAGATAAAGAGATTAGTTTAAGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 516>:

GNMFU33F gnm_516

20 GCGAAGATGATCTTAAGGGCTTAGATTCCAATCAAACCTCAAGCAGGAAATGTTCCAGAAG
TTGAGACCGTTTTTGTGTACGAAGATGATCTTAAAGGCTTAGATTCTATTATTAAGACG
ACCAACAACATGATGAAATTGCTAAACATGTTGAACATTTAAGTCAAGATTATTCTAAG
AGATAAAGATAGTGCTAAAGCAGATTTATCTAATATTTCTGATGATATTGATTCAGTTT
GAAAAGAATTCGGTTCCTTTACTGATGAGACACAAAAA

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 517>:

GNMFU37F gnm_517

30 GACTCTAGAGGATCCCCGTTATTAGTCACTATCCCCTTATGAAAAGACTATTTGGAGGTT
AAAATTCTAAGTACCATGGAGTTGAAAACCCCTAACTTTAAGCTAATTGATGAAAAGATT
GCTGAATTTAATAAGAGTAATGAAAACCTGATTGTAAACTACTTCAAAAAGAAAAGGAA
TTTGCCACAAACCAAGTACTGTTTCAGTTTGATACTCAGTCAAAAAAGTCAGAAGAAGTG
AAAAAACCTAGTAAAAAATACTGAAAAGTTATCACTGGGTACCGAGCTCGAATTCGTAA
TCATGGTCATAGCTGTTTCCTGTGTGAAATTGTTATCCGCTCACAATCCACACAACATA
CGAGCCGGAAGCATAAAGTGTAAGCCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTA
35 ATTGCGTTGCGCTCACTGCCCCGCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAA
TGAATCGGCCAACGCGCGGGGAGAGGCGGTTTTCGCTATTGGGCGCTCTCCGCTTCCTCG
CTCACTGACTCGCTGCGCTCGGTTCGCTCGGCGAACGGTATCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 518>:

40 GNMFU39F gnm_518

AAGTTTATTTCTTTTCTTTGCCTCTATTATATTTCTGTGAATGATGTGGTTTTATTTT
GTTATTGGAATAATAACGTTATTCATTTTTTTCAAATTTTATCAATTCATTTTTATT
AATTAATATTTTCATTTTGATTAAGTATTAATTTCTGGGTTATCAAGGGTTATGATATT

TATTTCTATTTTTTATTTTCTTTAATATCTATTATTTATTATAAGAACTAAAATGTCTA
TAATTTTGTTCAAAAAAGCTTATAATTAAGCATAAATGCTTAATTATAGTAATAATTAA
TACTCTCTAAAATAGATACTATTATATATAACAG

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 519>:

GNMFU40F gnm_519

10 CCTGCAACTAATTTAATTGCTTGGAGACTGAATGCAATCCAAAGTGGCAATATTAACCT
TCAACTACTTTTAAGTTGGAATTTGTTAATTTTAAACACCAACAGAAGTTTGTATTAAAT
TGGTTTAAAAATGAAAGTGAATCACTGCGTGATTTCATCAAGTTTGAGAGAATCAAT
AAGTTAGTGGAAAGGGAGTTTGTAAAGTAACAATGTTAAGTTTAGCACAATTAGAAAGTT
GGTTTTTATCGCTCCAGCACTGCTTTTAGCAGTATTGAGTGGTTATCTCGCTGAACGCG
TTGGGATCATTAAATATTGCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 520>:

15 **GNMFU43F gnm_520**

TTTACTGTGGTTTGGATTAACCTTATCCTCATTGAATTTCACTGGTAGTGCTGCAGTTCTG
TGATCCTGTCAAACGATGGCATTATAAACAGGCAAACCATTTTCTTTATTTCAAAAAT
ATTGTTTCTCTTTGATTGGTAATACCACTGCAATCACTTCATGAGATTTGATTGTGCT
20 TTATTTTATGCACTTTGCATGGTAGCTAGTTGGGCTGATCAAATTTCTAGTGGATCTTGT
TCAACTCAACCACTATTAGGAAAAAAGTGTTAAATTCGTTTGTGCTATTGCTATTGG
TTAAGATTGTGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 521>:

GNMFU45R gnm_521

25 GTTGATGGCGAGATAACGTTTGTGTAATCTGGACACGTAAAATCTAAAGAACCGTTTTC
GAGGGCGATGTAGCGGTTGTGCGGCGCAACCAAATATTGCCGGGGTGATATCCGCGTG
GAAAAAGCCGTCGCGGAAGACTTGCGTGAAGAAGATTTCCACGCCGTAATCGGCGAGTTT
GTGCAATCGATGCCGTCTGCTTTGAGTTTGGCGATGTCGGAACCGGCGTGCCGTCCAT
30 CCATTCGATGGTCAGCACGTCGCTGGTGCAGTAGTCGTAACACCTTCGGCACAATCAG
CATATCGCTGTTTTGGAATTTGCGTCCGAGCTGGCTTGGCATTGCCGGCTCGCGCATCAA
GTCCAATCGTCGTGCAGATATTTGTGCAACTCCGCAACCACTTCGCGCGGCTTCAGACG
CTTGCCGTCGGCAACAGACGCTCGACCCAGCCTGCACCAAGCGCATCAGCGACAAATC
CTGTTGATCACGGGCAAAAGGTTGGGGCGCAAACTTTAACCG

- 35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 522>:

GNMFU45F gnm_522

40 TAGAGGATCCCCTGATCCACTGTTAATTGATCAAATGCATTTAAGCCAATAAGCTAAGGG
GCAATAACTTTTAAACGTTATCAACGGCTTCGTTAACGCCTTTACCAAATAATTTTTT
GGATCATTATCAGTAATTCAATTGCTTCTTCTCACCTGTAGAAGCACCTGATGGAACC
ATCGCTTCACCTACATGACCAGATGCCAATTTAACAACACAAGCTACTGTTGGAACACCC
CGAGAATCAAAAATTTGATAAGCAAAAATATCGGTTATTTTTGAATTGATGTTTAGATT
GAACTCCCGGGTACCGAGCTCGAATTCGTAATCATGGTCATAGCTGTTTCCTGCGTGAA
ATTGTTATCCGCTCACAATTCACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCT

GGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCTTTC
AGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGCGCGGGGAGAAGCG
GTTTGCGTATTGGGCGCTCTTCCGCTTCCTCGCTCACTGACTCGCTGCGCTCGGTGCTTC
5 GGTGCGGCGAGCGGTATCAGCTCACTCAAAGGCGGTATACGGTTATCCACAGAATCAG
GGGATAACGCAGGAAAGAACATGTGAGCAAAAAGGCAGCAAAAAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 523>:

gnm_523

10 CCCGTTAAAGCCTTTGATTATTCCAAAGCCTTTTGAATAAGGCGTGGCTTCACGTAAAT
TAGGTCAAATTTTACGGTTAATTTAAGCGTCATTAAAGAATTTTGGCTTTGTTAAAA
ATTTAAATCCACAAGCAATTGTTGAAATAGGTGTTGGTAAAGGAGCGTTAACAAATTATT
TGTTAAAACTCAAATACCTTACAAGGGGATAGAAATTGATAAACGCTTAATTGAATATC
TTCTAGTTGAAAAGATATTAAGTGAAGACCACTAGTTAAAGGCGATATTCTCAAAAAGG
15 ACTTTAATAGTTTTTTTGAATAATTTAAGTCCATTGGGTACCGAGCTCGAATTCGTAATCA
TGGTCATAGCTGTTTCTGCGTGAAATTGTTATCCGCTCACAATTCACACAACATACGA
GCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAATT
GCGTTGCGCTCACTGCCCGCTTTCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGA
ATCGGCCAACGCGCGGGGAGAAGCGGTTTGGTATTGGGCGCTCTTCCGCTTCCTCGCTC
20 ACTGACTCGCTGCGCTCGGTGCTTCGGCTGCGGCGAGCGGTATCAGCTCACTCAAAGGCG
GTAATACGGTTATCCACAGAATCAGGGGATAACGCAAGAAAGAACATGTGAGCAAAAAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 524>:

GNMFU50F gnm_524

25 TGGCTTTTGCAATGCAAACATCCAAAACCACACATAACCCCTTTGTTAACCAATCAATAGT
ATCAGATAAAAATCCAAAAATAAAACCCCAAATAGGACCAAAGATCCATCCGAACAATGC
AAAGGGAATCCTTAGAAAACTAATGCTTAATACATTAGTAACACTAATTGAAAAGATAGA
AAAGATAAAGGTTAGTGCTAATAAACA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 525>:

30 **GNMFU51F gnm_525**

CTAGAGGAGTCCCAAGTTTGAATCGTCATTTAACAAGAAATGAACTTGAGAAAGCTTAAA
TAAAATTCGCTCTTTGATTAAACAAAAATAAGCTCAAAAGAGATTTTACTGATTTTGA
AGGGAGTCAAAAATAAATGCAATTGCTTATTTTGAAGAGGAATATTCTCAACATGAAAT
ATTAAGAGTGATCCGCTTTGGTGATTATAGTGTTGAGTTGTGTGGTGGCACTCATGTAGC
35 TAACACTGCTTCAATTGAAGATTGTTTTATTACTGATTCTATTCTTTAGGAGCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 526>:

GNMFU53F gnm_526

40 GGAGCATTTAAAACCAATAAACACCAACTCCAGCAGCACTAAATGCAGTAATAGCAGCA
AACACAAAGTAAAAAATAATTGCATCTTTTTAGTTTTGTTGAGTTGTTCAATACTTTTT
TGAGAATGGGCTTTCGATTCTCATTACGCTTACTTGCCCACTTGAGGAAGTTTTTGA
GAGAGAAATTGGACTGGTAAACAATCACTAAAAAGATGCATGACAGGTCACCCAGTTGT
AGTGAAATTAGAGACAATTTCTGTTAAAGGTACTTTTGAAAGATCCCAAAGTTCAATAA

GATGATTGCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 527>:

GNMFU55F gnm_527

5 CCCAAAGTTACTCAAGAACTCGCTTAGAAAATATTAAGGGATGGAAAAAATAATAGAG
CAAATTTATCAAGAACTGAGGGTTGTAAGAAGAGATGCATTACAAATGATTAAAAAGAT
AATCACAATGAGGATTTAGAAAACCTTTAAAAGCTGAAATAGAAAATTAACAAAAAT
TATTCTAATCAATTAGAAGAGATTCAAAAAGACAAAGAAGAAGATTCTAACAATTTAA
10 ATGAATGAAAAAGCAAAACAATTCATCAAAAAGCGAACTTCAGTATTCATTGCTTTATTA
GTTGTATTTTGCTTTTTCTTTAATTAGCGCATTGCTGATGGTTTTAACTTTTGATCA
CGTGATCAGCAGATTTCAATTCAAGAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 528>:

GNMFU56F gnm_528

15 TTTGGAATTCAACTTAACTGATGATCACATCAAAATTGTTTCAGAGACCCAGATGACGCTA
AGTTAAGTGATGCCACCTTTGTTATTTTGATATTGAAACCACTGGATTACATGGTAGGT
ATGATGATGTTATTGAGTTTTTCAGCAGCGAAAATTAAGAATAACAGCGAGATAGATCATC
AGCAATTCTTTTTAAAAATTGACAAACCTATCCCAAAAACAATCACTGAAATCACCAAAA
20 TAACTGATGAGATGCTTGAAGCGGTATTGATCAACAGCAAGGTTTGAAGAGATAAGAA
ATTATCTAGATGATTGTGTTATGGTAGCTCATAATGGTATTAATTTTATTACCCTTTT
TGCAAACTCAATTTGAAAAATA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 529>:

GNMFU57F gnm_529

25 CGGTCATTTTACTACGGTGTAACAAACGTTTCATTGCACAGTCGAGAGATTTCAATAATT
TTAAATTTTATATTTTATTATTACCACATGCGACTTGAAATAGAAAACGGGCTTGAATT
TGTCAATGATCCTGTGGTAAATGAAGTGGCAAGATCTGTTTTTTCATCCTTTTACAGG
TAATTTAACAACAACTTAGTTTCAGAAGTCATTTCAATAGATACATTTTATGCCAT
TAACTACCCAGGGCATGGTAATAGTGTATTATTAACAAT

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 530>:

GNMFU63F gnm_530

35 CAAAAATACACTAAAAAACAGTTATTATCCATGTTGGAACCTCTATTGGAACCTGGGAA
AGGTTTATTGCTGCTTTACTTGAAAAACAAGTGGAATTTTCCTTTATGGTTAGCACCT
GTTCAAGCCGTAATTATTCCTGTTAATATCCAAAAGCATTTAAAGGCAGCAAAAAAAGTT
TATAACAAATTGCTAAAAGAAAACATCCGTGTAATTTAGATGATAATCAAGATCGCTTA
GCTAAAAAAGTTAGACAAGCAATCATTGAAAAATTCCTTTACAACCTATTGTTGGAGAT
AAAGAAATAGAGAATTTAGAGAAGTTGACATGCCGTGGTTTTAAAGGTGAAAAA

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 531>:

GNMFU64F gnm_531

GGCCCTGCTGGTTATATTGCTGCGGAGTATGCTGGCAAACATAAACTTAAACCCCTAGTG
ATTGAAAAGCAATACTTTGGTGGGGTGTGTTTAAATGTTGGGTGTATCCCAACTAAAACG
TTGTTAAAAAGAGCAAAGATTATTGATTATTTAGTTCATGCCAAAGATTATGGTATCACT
5 ATTAATGGTCAAGCTAAACTTGATTGAAAACAACGTGTTAAACAAAAACAGGAAGTAGTT
GATAAATTAGTTGCAGGGGTAAAAACAATTATTAAGGGTGCTAAGGTAGAAAGTATTGAA
GGGGAAGCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 532>:

10 GNMFU65F gnm_532

CCAAAAATGGTTTTGACCATTCTTGGTAAATTTCTAATAGTCGGGAGTTnTCCCGTGGTG
TTTGGTGACATTGCAATAGGTTGTATAAATAATCTAAATTTGGATAAAAATTACTTTGA
TTATTGGTTGAAATATTAAAGCTTTTAAACGCTTCATTTTTATCAATTGATTCATCAATT
15 CTTTGATTAATTAACTAAGCTTCTTTAATTGCATTATGAATTTATCTTTAAATTTAATA
GTTGGTTTAAAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 533>:

GNMFU68F gnm_533

GGTCAAAAAGCAGCTTTAGAACGATTAGCAATTAGTAGTGAACCTTAGCATATAATAA
20 CGAAATTAATAGTGGTTTTAAGATGTTACTGTTGATAATTTAGGTGATGCTAGAAAGGT
TCAAATAGCTAAAGAAAACTACTGTTATTGGTGGTAAAGGCAATAAGGATAAAATCAA
AAAGCATGTTGAAGCTTCTAAACGGAAGATTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 534>:

25 GNMFU70F gnm_534

TTGGTCCCATCAATTGGTTGGTAAATTTGGGAGGATGTACAAGAGTTTCTATATGCATTG
CCGGTAGTGAGTTTAAATCCAGTTGAAGCATTGGGGCTGGGATTGTTGTTTAAGCCAATG
GAGTTGCGCATCGATCGTCACTGATTGAAATTTGAACCAAGATGTACCTCTATCTGGCTT
30 TTGCCCTTTTGTGTTGGCCAACTACTGTTTAAGGTATATTTAGTCAAAGGTTGTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 535>:

GNMFU71F gnm_535

CCCGCCTTCAGCGCCAAAACCATTAACAATGACATGAACTTTTCTTTCATATTTGAT
GGTTTTGTGCAACCATTAGTCATTTCAAAAAAGTTAATTTCAATTACTAAAGCAATATC
35 AAGGTTATAGGGAACAACAATTGTTGTTGACGTTTTTTAGAACG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 536>:

GNMFU73F gnm_536

CTACTGTTTTTTCATTTGAAGCGGATTCAACTGGCAGAGCACTAGTAAATACTCTAGTAA
TTATTTTGATTACTATCACCATTACTTTTCCACTAGCACTTTTAATTGCAATTTGACTTA
ACGAGTACAATAATTCAAAAGTGGTTAAAAATGTTTTAACTTTGTAATTGATTCACTAA
5 GTTCAATGCCATCTATTATTTATGGATTATTTGGACTTCTTTCTTTTAAAGAGTCTTGC
AGTTAAGTGCTGGAGGAGCTAATGGTACTAGTTTAAATAGCAGGCATTCTAACTATTAGTG
TTGTTATATTACTCTTCCGGGTACCGAGCTCGAATTCTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 537>:

10 GNMFU76F gnm_537

CCCCCAAAGATAAAACCCCTCGCTTCAGGACATACTATCGCTTCTGCATTAATAGCTTTA
ATAAACTGTGCCATTTGGGTTAGCACAAAATTAAATAGTTGGGGATTGGAAAATACTGGG
GTAATGTCATAAAACAATGTACCTTGGTTGGGAAAATTTTCAAAGCGCTTGATTGCTTGA
TCAAGCAACTTAAAGTTTTGATCCATAAATATCTTTTTTTTAAAACTGTTAATTCCTGC
15 AATTAAGTCTCTTCAATCTGATCAATCTCTTAAAGGATGTTTTTGTGTTTTAAGCT
CAAACGGGAATGAACATAGTTGAAAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 538>:

GNMFU77F gnm_538

GACATCTTCTTTTCTATCCAGGGATAGTTACTTTTAAGCATGGTGAAGCACGGCATGAAG
CTTTAAAGATTATTCCTAGTGAATTACTTTTAAGTGAAGTGAAGTCAACCGTGATTACCCC
TTCTCCTTTTCGAGGCAAAGTTAACTGACCTGAATATGTAGTTCATACTGTTAGCACTGT
TGCTGAAATAAAAAAATAGAAATTGCTGAAATGAAGCGAATTATTGTTAAAAATGCAAA
AAAATTATTTTGACATTAAAGTTAAATAAAGCAATTTATTTAACAAATGGATGTTAGAA
25 CTGAAAGATTAAACGAATTGTTTTTGTGTTATCATAAAAACTTAAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 539>:

GNMFU78F gnm_539

AAATTACCTTGCGTTGACAAACAAGATATTAAACCAGAAGAAGCAGACGAACTTAAAAAG
30 CGTTTTGTTGAAGTTGGTGCACTGTTGAAGTTAAATAAAGATGGCAGTACAACAACGGC
GTTCTAGTAAACACCGTCGTGATAAAAGACGTTCTCACGATGCACCTACTCTACAACTT
TAAGTGTTTGTAAGAAATGTGGAAGAAGAAGTTATCACATCGTGTGTGCTCTTGTGGTA
TGTACGGTGAACCTAAGAGTTAAAAAGCTCACTAATT

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 540>:

GNMFU83F gnm_540

AGTTAGTTGTAAATTCGCTTCAAAAACACCAAAAGCTCACCAAAGAAATAGACCTTGATT
TCACCAAGCTTGATGAGATTATTGCAACCATTTTTGATGAACTAAGAATCCAAAGACTG
GCTTTACTAACTTCATTAAGCAGTTTGAAAAAACCAAGCAAACTAACAAAAAGATAG
40 CTGAAATTACTAACTTGATCATTCAACGCCAACAAATTATCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 541>:

GNMFU84F gnm_541

5 ACTAGTTTCATGGTAATCAAAGTTAATAGGATCAATTCCTGCATAAGCAGTTTTAGGTAA
AGTACTGGTTTGGATAAACACCATTCATCTTGTTTTAAACGAGTTTGAACCTGGTAGTT
CATCTCTTCTGGTTTGGAAATTTATCTTAGGATTGGCAAACCTACCCATAAGAATGATTG
GGTTTTTGGATCAAATGGAAACTAAGACCATTTCATCTTTATTGTATGGTTGATAATC
ATGATCATTCTTTAAA

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 542>:

GNMFU86F gnm_542

CAAGAAAAATAGATCAGTAGGATCAATCCTTTTTTATGTACCTAGTTTTATTCTGATTAT
TGCTATTCTAATTGGTTCTTTTGTGCTGGTAGTTTATTGTTGCAAGATGTCAATAATTA
TCGTGATTCTGCTTGGGAAGTTAGTTTATTTTTCTCACCTAATTTAATTGCAACTTTTTT
15 TTCAATTTTGTAAACAGGAACAGTAGTTAGTTATCTTTCCCTCGTTATAATTTTGCTGA
AATTAAAGTATTTACTGATAAGCTTGAAGAAGTTAGAAAAGCATTGTTAAGTGATAATGC
TAATCACAGTTTATCTATTCAAGAAACGCTTGGTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 543>:

20 **GNMFU89F gnm_543**

CTGGTTATTCTTGGCCTTTTTAGCGCGGTAAATGGTGCACCTATTTTGGAGTTTTTT
AAAGCTTTGTTTCACAATTTTAAGCCAACGCTTTACTTCGTTATGTGCTTCTTGTGAGGG
TTGGGGTGAAGTAAGGTCAATCCCTAAGAGTTTAAAGGTTTCAAGTGGCGCTAACTAGA
ACCTGAAGTGAAGGAATTTAAAGTAATTATCTTTCATCTTTTATCACCCTATTAATTTT
25 TTTAGCTACTAAAATACCTGCACTTGGCCAATGGCATACTTGTAACATAGAAGTTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 544>:

GNMFU91F gnm_544

30 ATGTAAACAGTGTTAATTTAACAAATAATGAAAATGAAATTAAAGTTAAACAACTAAAA
AAACAATGTGTGAAAGATGCTGAAATTTTCAACAATCATTAGCCAAAATTAGATCATA
ATTTGTGCTCACGTTGTTTTAAAGTGTGTTAAAAAATAATTGTGAAAAGGTTTTTCAGAT
CTTAATCAGATTGATATTTCTCAAGCTTGAAGTTTCTTTCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 545>:

35 **GNMFU92F gnm_545**

GGCAAAACCCTCTTAACAATTCTTGTACACAAATACTATGGCACTGGCAATAACAATAG
CAATGATAATGCTAAAGGGTAAAGAGATTAGTGAATAGAGAAAATATTGCGTAACCCAA
CACAAAGTTAGATTCATAACAGATCCTGAAAGGTTGTAACCTAAAGGATTGGGAGGA
GAGATCATACAGATCACTGTTAGCACTAAAACCCTTCTGTAAGCTTAAAAAGAAGGGGAT
40 AATGGTAAACAAAATTGTTGTTAAAAGCGCAGGGAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 546>:

GNMFU93F gnm_546

5 ACCTTTTTCGCTTTTAGGTAGTTTAAGAAAAGGTTATATGCTAGATGAAATGCTCTTAGA
ACAGTAAATATTTGCTACAATCATAACGCTTTAGTTTTAGTTGATACACCAAATCCGT
AGTCAATTTATTAACCTAGTGAAGTAGATTTTATGATGATAGCGCTGTAATAATATCCT
GAGCTGAAGATCAAACCTTGAAGTCTTATGATAGCACCCCTTTAGATCTCGCTATTAAAAAG
ATAGTTGAGGTTGTAAAGGGTGTGAACATTAAGATTAAAGGTCCTTTACCTTGCCTACT
AAAAAGGAAGTGATCA

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 547>:

GNMFU94F gnm_547

15 TCCTAAGTTATTTGATTACTTTAACCGAATTTGTTGATATTGGTGATCAAATGTTGTTA
GTGGTAAGCCAATGTTAACTAAAACAAAGGTATTAACTTTAGCTGTTGAAGAGATGAAAA
TCATTGCTAAGTGTATTGTTTCCACCTGAAAAGTGACATGGACTTACTGATATTGAAA
CCCGCGCTCGCAAGCGCTTTCTTGATCTTACCTATAACTTAGCAATGCGTGATGTTTTTC
TGAAACGCACTAAGATTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 548>:

20 **GNMFU95F gnm_548**

CAAAAATGAACTCACGATCCACGAGGAGGAGTTGATTTAAAGTTCCCCCACCATGAAAA
TGAAAATGCCTTACACATGGCTTTATATAACCGCCATTACCAAACATTGGATGCATAT
TGGTCATTTGATGATTGAAAACCAAAGATGTCAAAGTCATTGCAGAACTTCTTGTAGC
25 AGTTGATTTTCTAACTTTTCATGATTTTCGTGTTTTCGCTTGGATCTTTTACCAAAAAACA
CTATTAGCATCCTATTGATCTAAACCAATCATTGATTGAAAAGCTAATAATGATATTCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 549>:

GNMFU96F gnm_549

30 AACCTAGTGAAGCAATTGAAGCAGTATTGAAATATTGGAGTTTTCATCAGGACTTAAATT
TCATTCTGATCGGTGATGAAAAGGCTTTTATGATGGTCTTGATATACTTCCAAAAATATTA
CAAAAAAAGTGTAAATCTTTTCAATGAAATGACCGACACTCCACTAAGTGCAAGAAGAA
AAGTTAACAGTTCAATGCAAATAGCCATAAATAGTTTCGTGAAGGTAATGCTGATGTTG
TAATTTACGAGGCTCTTCAGCAGTTTATGCTTCTTTAACAATGATGCT

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 550>:

GNMFW16TF gnm_550

40 CAGGCATTTATCTGGAAATAACTGAAACCGAACAGACCTAGATTCGCGCTGCGCGGGAA
TGACGGCTGCAGATGCCCAGCGTCTTTATAGCGGATTAACAAAAATCAGGACAAGGCGA
CTAATCCGACAGATACAGATAGTACGGAACCGATTCACTTGTTAAAGAATCGTTCTCT
TTGAGCTAAGGCGACGCAACGCCGTACTGGTTTTTGTTCATCCACTATAACTAAGGAAAT

5 TCAAATTAACCTAGAAATTATCCCTATGAGAAAAAGCCGTCTAAGCCGGTATAAACAGAAT
AAACTCATTGAGCTATTTGTGCGAAAGTTCAAATTTCCATTTTAAAACAATTAGTAAAATC
GAGTTTATCCTAATTGTCCAAGACAACCCCTATAATACTATAATTCAGAATATAAAAAATG
GGTTACATCTAAACATTACGGAATTTTATTCCCTCGCCTGAATTCTATTGTGAGATTCA
ACGAGACCTCATCATGTCAACGACTCCAACCTTCCCTACACAGACTTTCAAACCGACTGC
CATGGCGTTAGCTGTTGCAACACACTTTCTGCCTGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 551>:

GNMFW46TF gnm_551

10 TTGTTAATATATTTTCGCGATTAAACGTTTCTTAATATTAAATTCGGGTACAATCCTTTCCG
CTGATTACCGCTGCCGTTTCTCCCTTTTCGGCAGTGCAGCAAGTAAGACGTTTTCCTCGCA
ATGTATTGACCATTCATACTTACCCTTGGTATGAATGGTTTTTTTTGCACGTTGAAAATG
CCGTCTGAACGTTGGGTACCGAGCTCGAATTCGTAATCATGGTCATAGCTGTTTCTGTG
TGAAATTGTTATCCGCTCACAAATCCACACAACATACGAGCCGGAAGCATAAAGTGTA
15 GCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCT
TTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGCGCGGGGAGA
GGCGGTTTGGCTATTGGGCGCTCTCCGCTTCCCTCGCTCACTGACTCGCTGCGCTCGGTC
GTTCCGCTGCGCGAGCGGTATCAGCTCAATCAA

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 552>:

GNMFW72TRC gnm_552

AACCGCTCTGCCGTCATTCCCGCACAGGCGGGAATCCATACCTTAGCACAAACAGTAATAT
TCAAAGATTATCTGAAAGTCCGAGATTCTGGATTCCCGCCTGCGCGGGAATGACGAATTT
TAGGTTTCTGATTTTGTCTTTTGTGGGAATGATGAAATTTGAGTTTATAGGAA
25 TTTATCGGCAAAATAGAAACCGCTCTGCCGTCATTCCCGCTCAGGCGGGAATCTAGACC
TTAGAACAACAGCAATATTCAAAGATTATCTGAAAGTCTGATATTCTACATTCCCACTTT
CGTGGGAATGACGGGATGTAGGTTCTGTTGGGAATGACATGGTGCAGGTTTCATGGGAATGAC
GTGGTGCAGGTTCTGT

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 553>:

GNMFY91F gnm_553

GTGCGCCGATTTTCCAAATCTGTTTGAACACCGCCCAATCCGGTTTGCCGAATTTGCGCG
TCAGTCCGAATGGGCGGAAGAAATTTCTTGGCGATATGAATCTCCTTTGGCCGAGTCT
GCCGCTTCTCGATCTGTTTCGGCGCCAGTCCGCAGCCTGCGCCGCCCAAAGCGGGCATAC
35 CGAATTTGCCGTAAACGAAAATATAGTTCAAGCGGCACGTTCAACACAAACGCCGCAAAGC
TGACCAACATAATCAGGCGCGGGCGGTTTCAAGCTGGAAGTGTAGGCGTGCAGCGCGCGGT
GTACCATTTGCCCGCCGATCGCCAAGCTGGTGAACAACATATACTGCGCCATCGTGCCTT
CCACATAATCGCTCAAGGTCAAGCTGAGTTCAGGCTGGAAGTGTAGGCGTGCAGCGCGCGGT
CATGCCGAACACGCCCAAAAACAGCCGGAACCAATCCCTGCGCGCCCGTTTCGCCCCAC
40 TTCGTCGGTTTTTACCCGCGCCGTAAAGCTGGGCAATCATCGGGTTCAAGCGCGCCATAAT
GCCCATAAAGGTAATATAAACCGTGGCAAACGCGCTGCTGCCCAAAGCCAACGCCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 554>:

GNMGA51TR gnm_554

5 AAATTATTTTATTTTGTATGAAAACCTTCGAAAAACATGGTCTGCACAATATCGGGAT
ATGGAAATTTAGTACGGAATTTTGAATTTGGAGCGGACAAGGGCGGAAGTCTATATC
AACGGAAGGCGGGTTATCATAACGAAGCCGAAATGGCGTCTGCTTCTTGCGTTAGCTA
ATGGGGGAATACCTGGAATTTGAAGAAAGCGGTACGAAAATTACCGTTGAAATCGGCAGC
CGGTGGCATTTTAATGAACTATAAGAAATATTAATACACATTTAAAGAGGTACGAACT
TC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 555>:

10 gnm_555

AAAGACGGCGTTGATGGTTTTAACATTTGCGCTCATTCGGATTTGAGCCATGGCAATCTT
CCTTTAATGTGGTGGAAATCATGAGTGTGCGGACACTGTACTGCTGCCTCCGGTGAAC
TGCCGTTTCGGGATATGGCAGACGCATCCTTCCTAACCGCATCCGAATACCCCAAACCT
15 GACCGAATGCAAACTGCTGCCGGAACGGTTGTATGACACTTCTACTACTGGATGTTG
CGGGCGCATTATAATATTTTCCATCCGCTCTTGAAACATTTATTTACACTTTATTTACAC
TGCGGCGGCAATCGGTATACGAGCGTCAATACACGTTAAATGGCGTTTGCACCAAGTT
TGGGAGTGATGATGGAACACAGCTTACATCGGCATCATGTCGGGAACCAGCATGGACG
GGGCGGATGCCGTACTGATACGGATGGACGGCGGCAATGGCTGGGCGCGGAAGGGCACG
CCTTTACCCCTACCCCGCAGGTTACGCCGCCAATTGCTGGATTGTCAGGACACAGGCG
20 CAGACGAACTGCACCGCAGGATTTTGTGCAAGAACTCAGCCGCTATATGCGCAA
CCGCCGCCGAAGTGTGTGAGTCAAAACCTCGCACCGTCCGACATTACCGCCCTCGGCT
GCCACGGGCAACCGTCCGACACGCGCCGGAACACGGTTACAGCATACAGCTTGCCGATT
TGCCGCTGCTGGCG

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 556>:

gnm_556

CTAGAGGATCCCGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGGTAC
ACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGA
30 GTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGTGTGTTGTTTTGTTGC
AAGCAGCAGATTACCGCGCAAAAAAAGGATCTCAAGAAGATCCTTTGGTACCGAGCTCG
AATTCGTAATCATGGTCATAGCTGTTTCCCTGTGTGAAATTGTTATCCGCTCACAATTCCA
CACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCTAATGAGTGAGCTAA
CTCACATTAATTGCGTTGCGCTCACTGCCCGCTTTCAGTCCGGAAACCTGTCGTGCCAG
CTGCATTAATGAATCGGCCAACGCGCGGGAGAGGCGGTTTGGCTATTGGGCGCTCTCGG
35 CTTCTCGCTCACTGACTCGCTCGCTCGGTCGTTCCGGCTGCGGCGAGCGGTATCAGCTC
ACTCAAAGGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGAACATGT
GAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCC
ATAGGCTCCGCCCTGACGAGCATCAAAAAATCGACGCTCAAGTCAGAAGTGGCGAAA
CCCACAGGACTATAAAGATACCAGGCGTTTCCCCCTG

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 557>:

GNMGJ04R gnm_557

45 CATTCATAGTTTGCTTTTTACTCTGTTAATTGTGTCTTTTGGTGCATAGCAGTTTTAA
AGTTTGATATAGTCTCACTTGTCTATTTTTGCTTTTGTGCTGTGCTATTGGTGTCTATA
TCCAAGAAATTATTGTTATATCCAATATTATGAAGCTCTTCTTGTGTTTTCTTCTAGG

5 AATTTTATAGTTTTTTATTTTAAATGTTTAGGTTTTTAATCCATTTAGAGTTAATATTTG
CTTATGGTGTAAGATAAAGGTCTAATTTCACTTGTTGTCATGTGGATGTCCAGTTTCCC
AGGGCCATTTGTTGCAGATTGTCTCTCACCCATTCTTTCTCACCTTTAACACTGCTGTG
AATGGCCTTTATTTTCTACCTTACACCATTGACTCTCTCCTTCTAGAAAAAACCTTT
10 CTCAATCCCACTTAAACTCATTTAGTGGATTGCATTGGTCTGGATTATCAGAGGTTTCTG
TAATTAGGTTGGCTGTGCCAATAAATATCTTCATGGATATCCTGAATTTGTTTTGTATAA
AGAAGAAATAGGCAGATGACATTGGTAGTGGATCGGTGAGAAATTTGCAATAAACTCAA
ATGTGCAAGATGTGCCACATTGTGTTTCTTTTCTCAATTAACAATATTGGATTGGC
CTCCATCCGTACAATTTCTGGGCAATTCAA

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 558>:

GNMGK65TF gnm_558

15 AGCATGGGCAGCGTATCGGCGCGGCGGCAAGAAAGCTGCCGCCGCAAACACGACCAGT
CCCGCATAAAATGGTTTTCTTGCGCCCGAACTTGTCGGAAGCGATGCCAAAGGGAATTTGA
ACAAAACCCGGGGCAACCCCTTAATGGCCAATGGCAACCCGACAACGGTTTGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 559>:

GNMGL93TR gnm_559

20 CGTCTGAAGGCTTCAGACGGCATTGTGCGTTTGTGCGGCGGTGTTTAGGGGGCGGTAAC
GGCGTGTTTCGGCACTTTGTCCATATCCCAGTGTGCCACGCCAGTCGAGCAGTTCCGGC
AGGGCGGTGCGTTTCCGGTGCTTCGGGCAGCTTGAGGTAAACGGAACACTTGCGGGATGAG
TTGTTGCGGCGGTTTTAAAGCCAATGCGGGGGCGAGCGTCTGTTTCGACCAGTTCTGCCC
TTGTGCGTTGGTCATCAGCGGCAGGTGGGCATATTGCGGTGTCTGAACGTCCAACACTG
25 CTGCAATAGGTTTGGCGCTGCGTGGAACGAGCAAGTCTTGTCGCGGACGATGTGGGT
AACGCCCTGTTCGGCATCGTCGGCAACGACGGCGAGCTGGTATGCCAGTAACCGTCTGC
ACGACGCATGACGAAATCGCCGATGTGCTGGCCAGTTTTTGGGCGTAACCGCCGACGAT
GCCGTCTGAAAAGCCGATAAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 560>:

30 **GNMGO35TF gnm_560**

35 GAATGACATATTCATAAGTTTCCCGAAATCCAACATAACCGAAACCTGACAGTAACCGT
AGCAACTGAACCGTCATTCCCACGAAAGTGGGAATCTATAAATGAAAAGCAACAGGCATT
TATCGGAAATAACTGAAACCGAACAGACTATATTCCCGCTGCGCGGGAATGACCGCTGC
AGATGCCCCGACAGTCTTTATAGCGGGTTAACAAGTGTGAGGACAAGGCGGCTACGCCGCA
GACAGTACAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 561>:

gnm_561

40 AGCATGGCGCACAGCAATGCCGTCTGAATACGCCTCCCGCTCGGTACACGGCGAGATCGG
CAATGGCAGCGGTACTTTGGCCGCCGATATGCTTAAGTTCAGTAACCTTACGCCACCAAA
ACCCTTGCTAGCTAAGGGTTAAACAGCTCACTTGAAATCTACTTAAGTCTAATCTAACT
ATCCAATATGGATAGATTTTTAAACATAGGGCAAGCAGCAAAATTATTGTAGCTGAAAGC
ACAATCACTCGCTGGTGGTCTCAAACACGTGCCGACTACCTCGCCGAAAACACTATCAGC

CGCGATAAACCGTGGGAAAAGCTCGTTATCAGCCGCCGCACTTGGTACTATCGCGGGAAA
CCGATGCTGTCTGAAACGCAACAGGAGAAAAATAATGAGCCGTACCTGATTACCTTTGA
TATGGATACCAACTGCCTGAAAGACAATTACCACGGAAATAACTATACCAATGCCTACTC
CGATATTAAAACCATCTTGGCTAGACATGGATTTGAGAACATTCAGGGCAGTGTATTATCT
5 AGGCCGTGAAGGCATCAGTGAAGCACACGGAACAATAGCCATTGAGGAAGTACCGCTCG
GTTTGATTGGTTTTACTCCTGTATTTCAAACATTAAGTTTACCGCCTTGAAAGTGATT
GAACGCACAATTTATCGCTGATGGTGTGTATCAAGCCAAACAGGCTTTCCTTCAACGTGT
TGAACAACTTCGTATATCCCTAACAGAAGCTGGATTGTCTGATGAGCAAATCAATCAGGT
10 TCTGGAAAAACAGAAATTTGAATTGGAAAGTCCCTAACCTGAAATTAAATTAACCTCCTTT
ACTCACCAACATCCGCCGAGCTCTGTCTAGTTTTTGGCGCGCTGCGGCGATTCTGTGCG
TTTTAGAGCTTCGGGTAGGTGTGAACAACTCACTCGAAATTTACTTAAGTCTAATCTA
AACTATCCAAGCAGTAATTAGTACAAAAAGGCAAACTTATTTAGGAGTTTAAATTC
AGCTGCGATAAACCGTGGGAGAGTCTCGGCATTTCCCGGCCACTTTGTACAAACGTGGC
AA

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 562>:

gnm_562

CATATAGCCGATGGTATAGATATGCACCATCAACGACACGCCCGTTACCACGACCATCAT
CATCGCCGTCATCGTATCGACCAAGAAGCCGACGGAGAAATCCAAGCCGCCCATTTGTCAG
20 CCAGGTATAGACATTCTCGTCAAACGTGGCGCGGCTGCCGTCATAAAGCCCCACAGCAC
ATAAGCCGACAGCAGCGCGGACACGCCACGCCGAGTATCGTAACCGTATGCGCACCGGC
ACGTCCGATTTTGTTCGCAACAAACCGCAATCAGCGAGCCTGCCAACGGAACAAGGGC
AATTATCAAATATAAAGTCATATCGTTCATTTGATTGAATCCGATTGATTTAAAAATCTA
TGTTCGTTTCGTACAAAATTACTTCGGAACAAATCCAACACGCTCCAATCGTTTGCG
25 TGCCACAGCTAATTGCTCTTCAGTAAATAAATCACACCACGGCTTTGTAAACACAGATA
TTCCATACTGTATTTCAAGGCGTGGACTCCGCCACCACTCAAATCAGCTTGCTCGGCGG
CGGTTAGTTCGGAGATGACCACTTTGTCCCCCTTTCAACCCGCTTTTACTTCGGTAT
TCATACTGTCTCTCA

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 563>:

gnm_563

CTTCAACCATGCCAAAACGGGCAGGACGGCGGTTGTGCACTTGCTCATCAACACGCCCGC
CATCCAAGACTTCATCCTGAAGGGCGACCTGATGAACATCAGTAAATCATGGAACCGC
CAAAACCGACGGAATGCAGACGATGGATCAAAACCTTTTGAAGTGTACCGTCACGGCAT
35 CATCAGTTACGAAGAAGCCCTGCGCCAGTCCGTTTCCGCCAACAACCTGCGATTGCACAT
CCAACCTGCACAAAGAAGGCAAAACGCCGAACTCCTTTACGACAGGGTCAACGGTCTCAA
CCTCATTTCTGATCCGCAAAACCCAATGCCGTCTGAAAACCGCATCCCCGTTTTCAGAC
GGCATGATTTTATCCGTCGG

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 564>:

gnm_564

CGAACAGTCGGCATTGCGCCCCGAATTGTGGCAGGCGTTCCGACCGTTGGGGCTGACGCA
TTTGGTCAGTATTTGGGTTTGCACGTTACGATGGTGGCGGTGATGTTGCGTGGCTGGC
GAAGCGGCTGCTTGCTGTTCCCGCGCCTTCTGACGGTCGCGCGTGTGGGTTTGGC
45 GCGGGGTGTGCATGCGCTCTGTTTTACGCGCTGCTTGCCGGTTTTTCCGTGCCAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 565>:

gnm_565

5 ATAGCGGATGTGGTCAAGTGTATCGACGAATACAGCAACCGCCCGCAGGCGAGCTGCCC
CGACATCCTGACGGCGGGCATTATACGCCTAAGGCTTATCGGGAAATGAGCCTGGAACAG
GACGGTATCGCGCCGGATATGCTGTCGGCGCAAGAGCTGGCGACGATGTTTATCCCGCAA
GAGGTGCGAAAGTTACAGCGCGGCTGGCTGGATCATGCTTAACAACTCTTATTTCTCAAC
CGAGCTGGCGGAGTATCACAAGACGAGGTACGGGTACGCTACGATCTGAGCGATGCGTC
10 GGCGGCCAATGTGTTTGATATGGACGGCAAGTTTATTACTAAGGCGCAGGCCAACGGCAA
TACCCGCGAGGCTTTCCCGACGGCTCGTATCGACCGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 566>:

gnm_566

15 CCTGGGTTTCATCGTCTTCTTCCCAATCTGACCCCAAACATTTCGCCTTTTGGTTTGACGTG
ATGACAGGTAACATACCTTTATTTTCGGTCTTACGGGGCTTGGTTCGGGCTGTATTCGCC
GTTGAAAAAGTCTTTTGCATGTCAACGCGTGTATTTTGGGCGGATTGCATTAGTCAG
GAATGAGAAAAGTCGTATTCCAGCCTTCTTTTGCACGCCGCAACCGGTGCCGGTCAG
TTCGAAAAGAATGGCATTGTTGGCCGCCAAAATGGACGCGACCGTATAGGGCGTCTTC
CGAACCCATCAACCAACAGAGCTCATACATACGACCGCCCGAACTTTGGATTCTTTGTA
20 GATACCGGAACCGACAACCTTCTTCGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 567>:

gnm_567

25 CCGGCATCCTGCCCGAAGCGATGCTCAACTATCTGGCACGCTTGGGCTGGGCGCACGGAG
ACGATGAGTTCTTCACAATGGAACAGTTCATCGAATGGTTTGATTGAAAGACGTTTCCC
CGTCTCCAAGCCGTATGGACTTGAAAAACTCTACTGGATCAACGGAGAACACATCACAA
TCACACACAACGGCAAACCTCGCCGAACCTCGTCAAACCCCGCCTTGCGTTGCGCGATATTC
ATGAAACCGAAGAACCTGCTTTGGAAGATGTGTTGGAACGGTCAAAGACCGCACCCAAG
ACTTGGTCACGCTTGCCG

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 568>:

GNMGS92TR gnm_568

35 CGCCCAAGAGTGCGGACATCGGTACGAAATGCGCGTCTTTCAAACCGAGCTGTTGGCAA
GTCGGCGGTATGCCTCCACAATGGCGTTGAATTTGTCTTCGCTGTAATCCAGCAGGTCCA
TTTTGTTGACCGCCACCACAATATGCGGCGAGTTGAGTTGGCGGAGGATGGCGGAATGGT
GTTTGGCCTGCGGCAGAGCTGCAAGGGCTGCGCGCCGAAATCCAGTTGGGATGCGTCAA
CCAGCAGACTGCCGCCGAAGCGGTGCTTGGCGCCGTAACCATATTGCGCGTGTATTGTT
CGTGCCCCGGAGTGTGGGGATGATGAATTTCCGTTTCGCGTGGAAAAATAGCGGTATG
CCACATCGATCGTAATGCCCTGTTGCGGTTCCAGTCCGTCGGTCAGGATGGCGA
40 GACCAATGCCACGGTTTCCATGCCGTCTGAAACCGGCGCGCCGTTCCCGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 569>:

GNMGS94TR gnm_569

ATCTGCTTTTTTACCGCGCGCGGTTTGCCGTCTTTATTGGTAAATTTGGGCGGATCGAT
TATGCTGCCCACAAGCCGGTAATCCACTTCGAATTTATGGCATGAATGATGAATCAAAAA
CCGGTTGAAGCCGTTTTTGCTTTGGGCGATGGTTTGCATATTCAAAAAATCGCCAAT

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 570>:

GNMGT51TR gnm_570

10 CAGGATCCTTGGTGGCCTCCTGCACGGGTTGCGGCAGGCTTAAAAGGCGCAGGCTGTTGG
AAATCGCGCTTCGGCTTTTACCGACGGCTTGGGCGATGGTTTCGTGGGTGAGCCCGAAT
CGTCGGCAAGGCGTTTCAAGCCTTGCTTCTTCGATGGGGTTGAGGTTTTGCGCTGGA
GGTTTTCGATCAAACCATGCCAATGCGGTTTCGTGCTGATGGTTTTGATAACGGCGG
GGATTTGGTTCAGGCCGGCAATCTGTGCGGCGCGCAACGGCGTTGCGCTGCAATCAGTT
15 CGTATCGGGACAGTCCGTGTTCCGCGACGATGACGGGCTGTATCAGCCTTGCGCCTTAA
TCGAATCTGCCAGTTCTGCAAGGCTTCGTATCGATTTGAACACGCGCCTGATAGCGGC
CGGGCCGGATATCTTAACCGCAACCGTGGTCAATCGGTGCGCGCTGCTGTTGTCCGCGC
CGTTGGCGAGCAGCGAATCCAGCCGCGCCCAATCCGCTTTTACTTTTGCCATACCGC
CCTCCCGTGCCTATTCAGATAGGATGTTAAATCGGGTATTTTATCGGATATTGGGTGTTG
20 CCGACAATTTGTATCCGCGTTTATCGGATTTCTGTTTTTCTACTATAATAGCCGGTTTGC
CGTTGCAnGCGTTTTATGGG

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 571>:

GNMGT89TR gnm_571

25 GCCTGTATGCTCTTCTTTGAAAGTTTCGTATACGTCATGGGCTAAAAGGGCTGTTCCGAC
ATAAGGAACTGCCCTTGCTTAATTCGCGCCTAAGCGGGCAAGTTTGCCGACCCCCGC
CAATACGCCAGCGCGGAACTGATGAAGATAACAACCGAACTAATTTACCCGTAATTGA
TGCTCCAGTAGATACATGCCTTACTTTTAAATCTTGAGCTTCTGAAGTTAAATATCTTCC
CGATTCTCTATCAAATACACCTTTCCAAATCTTCTTCTTTGTCATCTGAACCTCGAAT
ACCTAAnATAGTGGAAAnGnTCCGACAGCAGAGTCCCAAGAAAATTACCCGGAGCATTTA
30 CTGATGCCAATGCAAATTTAGATACAAAAAACTAAAGCATAGGATAATCTTAAAAAAT
TTCGCCCTAGGATAAATAACATAACATTTTGCTTCATCTAATTTAATTAATGTAGAA
GAATCAGGGAATTGAATTTCTATAAAATCTCTATCATAACGATGAAAGAAATTCCTAAAA
ATATCAAATGAAACGAAGTTTAAAAACCCCTTTTCTAATCAATTCCTATAATAAATT
AACGCTTGTGGTAAATCTCTATAAATATGTGAATCAGTTTGAAATTTAACTAATGATA
35 TTCAGAAA

35

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 572>:

GNMGT90TR gnm_572

40 TGAATATCCAGTCCAACCTTGACGAACCCTTTCCGGCAGCATTACCGGTAACCGCGCGA
AGAAGCCAAAGCCCTGCTAGGCGCGGCAGCGTTACCGTTTTCCGAAAAAGGCCTGACCGC
CAAAGTCCACAAGTTGGGCGACAAGCCGTCATTGCCGTTTCTTCCGAACAGGCAGTCCG
CGATCCCGTCTGGTGTTCGCGATCGGCGCATGCGACTTCCAACCAAACCGCACCGCCAT
CCTCGATCCTGTCCGGTACTCGCCAAAACCAAATCTGCACTTTGAGACGGCAAGACACA
CCGCAGCAGAACCAATTTATGCAGAGTCCCAAGAAAATCAAAACGCCAAATCCCATACCAT
45 TAATCAGAATTTCTTCTATTTTTTCGAATCCACTATTCTTCCAAAGCGGCAAAACCCAT
ACCGTCCGCAAAGGCGAAACGGTCAAACAGATTGCCGCCGCCATCCGCCCGAAACACCTG

ACGCTCGAACAGGTTGCCGATGCGCTGCTGAAGGCAAACCCAAATGTTCCGCACACGGC
AGACTGCGTGCGGGCAGCCTGCTTCACATTCCGAATCTGAACAGGATFAAAGCGGAAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 573>:

5 GNMGU42TR gnm_573

CGTTGTTCCGGTTCGGTTTTTCGTCATACCAAATTCCTTATTTCTTCTGCTGAGATTTATG
AATTATTTGTGCAGCCCGCATTCTTTGCTGTTTCTGCCCTCCCACCACCACCGCCCGGAG
CGGATGTCTTCGCCCCGCTTGACGGGGCGGATGCAGGGGTCGCAGCCTATGCTGGGAAAT
CCTTGACGGTACAAATCGCTGTGAGGCACATTGTTGGAGAGGATGTATGCCACACGTCG
10 TGTTCCGACTAGTCGAAAATCGGGTTGTATTGCCGATGCCCGTCCGGCATCGTATTG
GCATACAGCAGTTCGCTGCGTGTGGCGGATTGTTCCGCGCGTTGCCCGTAAGCCACGCG
TCCGCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 574>:

15 gnm_574

TGTCGCGCTGACGCGTGCCGAGGAACAGCTCAACATCtAtCsGCgTaCTCtCCAAkACs
GCaAAAACAACCCCCGCCCTACwTGATTGAAGGCTCGccAgaCaTsCGCGGGAATGACGG
CATTCTGCGGCAATCGGATTATTTCCAAACAAAAGCGCGTGGTTGCGTTTGCCGCGCC
GAAGGATAGTGTATTGCCGAAACGTTTGTGTTCCGCGTTCAGCAGGCAGGCATCGTCGG
20 GCGGTTCCGGCGCGTGGTTGGGGTTGTTGGCTTCGGCAGGTTTGCCGTTGAGCAAAACCG
CTTTGCTGTTACAAAGCCGCGCGCTTCTTTATTGGAGGATGCCAAACCGGTTTTACCA
AGGCTTCGACGACATTGATGCCGTCTGAAACTTCAAATGCAGGCAGGCCGTCGAGGGCGA
GCTGCTCGAAGTCGCTTTCGGTCAGGCTGCTTTGGTCTTCGGCAACAGGCTTTCGGAAA
TGCGTTGCGCGGCGCAAGGGCTTCTTCGCCGTGAATCAGGCGGGTCATTTCTTCGGCGA
25 GGATGCGTTGCGCTTCGGGCTTGCTGCCGCTTGCTTGTCTTTGGCTTCGATGGCATCGA
TTTCTTCGATGGACAGGAAGGTAAAGTATTTAGGAATTTATACACATCGGCATCGGCGA
CTTTCAGCCAGAATTGGTAGAACTGATAGGCGAGGTTTTTTTCGCGTTCAGCCATACCG
CGCCGCTTTCGGTTTTGCCGAATTTGGTACCGTCTGATTGGTTACCPAAGGCAGGGTCA
GACCGAATACTTGTTTTTGGTGCAGGCGGCGGGTCAGGTCGATACCGGCGGTGATATTGC
30 CTCATTGGTTCGGAGCCGCCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 575>:

gnm_575

TACCGCGCACGGGCGTTTGAAATAGAAACCGATCAAGAGATACGACACCAAGCCCACCGC
35 TTCCCAACCGAAGAAGAGCTGAATGAAGTGTGCTCATATCAGCATCAACATACTGAA
TGTAACAAAGAAATATAGCTGAAGAAGCGTTGGTAGCCGACTTTTTCATCGTGCATATA
GCCGATGGTATAGATATGCACCATCAACGACACGCCCGTTACCACGACCATCATCATCGC
CGTCATCGTATCGACCAAGAAGCCGACGAGAAATCCAAGCCGCCCATTTGTCAGCCAGGT
ATAGACATTCTCGTCAAACCTTGGCGCGGCTGCCGTCAATAAAGCCCCACAGCACATAAGC
40 CGACAGCACGGCGGACACCGCCACGCCGAGTATCGTAACCGTATGCGCACCGGCACGTCC
GATTTTGTGCGCAACAAACCCGCAATCAGCGAGCCTGCCAACGGAACAAGGGCAATTAT
CAAATATAAAGTCATATCGTTCATTTGATTGAATCCGATTGATTTAAAAATCTATGTTG
TTTCGTACAAATTACTTCGGAAAAACAAATCCAACACGCTCCAATCGTTTGCGTGCCAC
AGCTAATTGCTCTTCAGTAAATAAATCACACCACGGCTTTTGTAAACACAGATATTCCAT
45 ACTGTATTTACCGTCATTTCGGGACATTTCCGCCCTGCTCGGCAAAACCCTTTGTCGCACC
TGCCAAAACCAAGCCAAAGCACTCGCCCGGATAGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 576>:

GNMHA81TRB gnm_576

5 AGAATACGCGCGGGTCAGAACACGCCGACCACCGTCCGGGTTTTGTCGTTTTGAAATATT
CCTCTAAATACGGCAGCGGGTTTTATCGACGGACAAACCGGTTTCACGCCAGTTTGC
TCAAGGTGTCGAGCATACCAAATCGTAAACGGCGATGCGTTCCGGGTTTTGCGGTATT
GAACGTCGCGCGCGCGGGTTTTGACGGTAACGGACGCGCCTTCGGTTTGTGCGGCGGAAA
CGCCTGTTCTTTGGCTTGTGGGGCAGAGTCGGAATTTGCGGCGAACACGCGCCCAAAG
10 CGAGGGCGGTGCATACGGCTAAAGCAGTCAAACGTAAACATACGTGTCTCCAAAATGGGG
ATATTGGGGCAAAGCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 577>:

GNMH73TF gnm_577

15 TACTCTAGAAGGATCCCCCGCTAAAGAACTCGGCTACGCCTCCGACCTCGACCTCGTCT
ATCTCTACGACGACCCCCACCCGACGCGAGCGACGTGTACAGCCGCTCGCCCGCGCC
TGACCAACTGGCTTTCGCGCCCACTGGCGCAGGCAGCCTCTACGAAACCGACCTGCGCC
TGCGCCCTAATGGCGACGCCGGTTTCCTCGCCACAGCATCGCCGCTTTGAAACATACT
AGCGCGAAACGCGCTGGACGTGGGAACACCACTCGCTTACCCGCGCCCGCTTCATCTGCG
GCACGTCCGAGATTGAGGCGGCTTCGACCGCATCCGCACCGAAATCCTCACCGCCGAAC
20 GCGACCAACCGCTTGGCAGGCGAAATCATCGAAATGCGCGAAAAACATGTTCCCAACC
CACCCGCTGCGGACAGCAACGTCAAATACGCGCGCGGTGGCGTGGCCGATGTGACTTT
ATCGTCCACTATCTGACACTTGGCCATGCCCGACAGTATCCGCAACTCTTGGACAACTAC
GGTACCATCGCCCTCTAAACATCTCCGCCGACTGCGGTTTGATTGACAAAACCCCTCGCC
GGCCACAGCCGACCGCCTATCGCTTCTACCGCG

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 578>:

GNMHF24TR gnm_578

30 AATCCAGCTCGGTAGCATTACGAATTCGAGCTCGGTACCCAGCACAAACCCCTTACATGT
ACCTTGTGTGGTGTCAATTGGATCCTAGCAAGAAAGGTATCCATTTGTTCCCAAAAATC
TTTATCATGCACGATTGAGTAGGATCCGCTGTTATAAGTTTTGCCGTCTGCACCCGTATA
GGTATAGCCGTTTTTCTGTAAACATCGGCGTAATCATTCTGCACATTTGTGGCTGTACC
ATAGAAACGTGTTTTCTGATTGGGGCAATGCCATTTGTTTTGATTGTTTACCCAATC
TTTTAAGGAAACGCTTGCTGTAATCCCCCAGACTGTGATTACTGGTATCAACCGACCA
GCCGTTACCCATTTTTTGAACCTCTCGATAAATATCTTGATTGATTTTTCTGAATTGGT
35 TTTGAGTAAATAGCCTTGGCACACTTTATTATTTAATTGGTCGTAACCGACATACATCAG
TTCAGAAACAAGACTTGCACCGAGCCATAAAAAATCTTTATTTTGTATTAGAAATCAGA
TTTATATTTCCCTGTTGGAGGATTCATGACTGCAATAAGCACACTACCGTTTGTACTAAT
ACGATGTTGTTTTGCTGCGTTG

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 579>:

GNMHF55TR gnm_579

GTACTATCCGTACTGTCTGCGGTTCCGCCCTTGTCCTGATTTTTGCTGATTCACTATAT
CGACATCGCCAAACGAGACTTCGTCATCGCCGTTTCGTCTTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 580>:

gnm_580

5 AATAGATTAAGATATAACTATTAAATATTTTAGATAGGATTATCGGAATTAAAGTCTT
TTATACCCAGTCGTCGGATGCGGTTTATAGCGTATTGTTGCTATATGTTGTTATGTTAT
ATAACGGTTGCATCAAAATTTACGCCACAGGCTTTCCCGACGGTTTGAAAGTTTGATT
TCGATAACTTGGAGACTTAAACAATGCCTACCCAATCAAAACATGCGTCTATCAATATCG
GTCTGATACAGGCAAGGGAAGCCCTGATGACCCAATCAGGCCTATTCTGAATCAGGCGA
ATATTACCGATCAGCAATGGCGGATTATCCGTCTTTTGGCGGAAAACGGCACGCTGGACT
10 TTCAAGATTTGGCGAATCAGGCGTGCAATTTGCGCCCCAGCCTGACCGGTATCCTGACCC
GCCTTGAAAAGCGGGTTTGGTTGTCCGCTGAAACCTTCCAACGACCAACGACGTGTTT
TTCTGAAGCTGACTGCCGAGGGCGAGAAGCTGTATGAGGAAATCGGCGAAGAAGTGGACG
AACGCTACGACGCTATCGAGGAAGTGTGGGCCGCGAGAAAATGCTGCTGCTTAAAGACC
TGTTGGCAGAACTTGCCAAAATCGAGGATGCGTTGAACTCGTAATACGCCGTAACGCGCG
15 GAAACGTCCGACGACGGCTTTTGAATCAAACTGCTGCACATGGGGGATGCCTTGTGT
GCAGCATTCTTATATAGGGGACAGTTTAAAGGGGAAAATGGCGGATTTGCAGAAAAATT
TTCAAACTTCGTTCCGTGATGCGATGGCATCTTGCGCGCAGGCGTTCATGTCATCACGA
CAGACGGTGCGGCAGGCGTTACGGCATTACAATGACGGCGGTGCGCCGGTTACCGACG
AGCCGCCGACCGTGATGCTGTGCATCAACCGGAGTGGCGGAATCATTCCGATCCTGTCCG
20 AAAACGGCAGCCTCTGCATCAATACGCTGGCGGACGAACATCAGGATGTTGCCGAACATT
TTGCCGGGTGACCGGCTGTGCCCCGAAGAGCGGTTTGCCTACCACATCTGGCATCGCG
GCAAAACGGGACAACCTGAAATAGAGGGCGCGTTGGCGCACCTGCACGGGCATATTGTCTG
GCAAAACATGAAATCGGCACGCATTTTGTGTTTTACGTACGGCTCGACGAAATCAAAAAT
GCGGGTGCAACGCCCCGCGCTGCTGTATTTAGACGGCAGTTTAGATTTTAGACTGAT
25 ATTCGGACAGATATATGAAAGCGATGATACTGGCGGCAGGACGCGGCGAGCGTATGCGCC
CTTTGACCGATACCACTCCGAAGCCGCTGCTCGATGTGGCGGGTAAGCCTCTAATCGGTT
GGCACCCTATGCCGTCTGAAGCAGGCGGGGTTTACCGAAATCGTCATCAACCACGCTTGGC
TGGGTGCGCAGATAGAAGATGCTTTGGGCGACGGCTCGGCTTATGGCGTGAACATCGCCT
ATTCGCCCCGAACCCGACGGCGGTTTGGAAACGGCAGGCGGCATCGCGCAGGCATTGCCGC
30 TGTGGGTGGGCAGCGTTTGGTGGTCAACGGCGACGTGCTGACCGACATCGATTTTA
CCGCCGCGTTTTCAGACGGCATCGTCCCTGCCGGAACATATTTCCGCCATCTGTGGCTGG
TGGAAAATCCGCCGCACAACCCGACGGCGATTTTCCCTGCTGCCCGACAGCAGCGTGC
GGCCGGAAGTAAATGGCGGCAACGGATTGACATTACGCGCGTGGGTATTTACCGTCCTG
AAATGTTTGACGGAATCGAAGCGGGCAGTGTGGCGAAACTCGCGCCCGTATTGCGTGGCG
35 AAATGCGGCAAAACCGGTGAGCGGTGAGAGCATACGGGCTTGTGGCTGGATGTCGGCA
CGGTATGCCGTCTGAAAGAGGCTCAAGCCCTTGCAGGGGCTTGGAAAGTAAAAACCGGTT
TCAGACGGTATGGCGGATTGCGTTTAAACGTTTCAACGCCAGCACCAACACGCCCGCGTT
ACCAGCCCCAAGCCTATCCATTCTGCGTGTTCGGGCGTTCGTCCAAGAAAACACCGCC
ATCAGCGCGACCAAGACCAGGCTGAATTTGTGATGGGGCGACTTGCAGGGCGTTGCC

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 581>:

GNMHI03TRB gnm_581

45 CCCACAGGAAAAACGGTCAATGCTTTTTCAGCGGGATTTTTTTGGGGAATTCGTATGTCTG
CTGTGCGATAAGGTTTTTTATTTCTGCTAAATACTGCGCCGCTCCAACAATCCTTCCCT
CTCCCTCCTCCGGCTGTGCGCCTTTGTGAATATGCTGTCTGAAACTCGGGGACTCAGAC
GGCATTGTTGTTGCCGCCATCAGTCGGCAAACTGTTTTTTCATCCTCTCTCGGCGTCTT
GGGACTCAACAGATAAAGTGGCTGTGCGGCGTGCCAGCAGCCGCTTCAAACCGATAGGCT
CTCCCGTATCGGCACAGAATCCATAATCCCTTTCATCAATATTGCGGATGGTTCGCTGTA
TTTTACTGAGAAGTTTTCGTTCCCGATCGCGGGTACGGAGTTCCAATGCGTACTCTTCTT
50 CCTGTGTGGCACGGTCGGCAGGATCGGAGGCTGATTGTTGTTCTTGGAGATGCCCTGTCTG

TAGCGGAAGCATTTCGATGAGTTCGTCTGCATTTTACTAGCAATTCGCGGAAAAAG
CTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 582>:

5 GNMHL46TF gnm_582

AAAGCTGGCTTGCCCGACACTCAGACGGTCTCCCGCCGGCATTTCACGCCGCAACCT
ACGGGCGCAAAGCCCGAATCAACGCCAAAATAACCGCCAGCGTAACCCGCCCGCGGTA
TTGGC

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 583>:

GNMHN01TF gnm_583

CAAAATACCCTTATAATGAGCTTTATGTAGCCAATCCTAAATCGGGGACGAGTAGTTGG
TGCAGAAACAAACGGGTAAACAACCGCCGCTGCCCGGTATATGCTGGCGCACGGAGT
CGGCGTGACGTGTCCATACTTACCGCCCAAACCGGGATGGCAATTTTCGGTCGCGCT
15 GGAACATTACGCCAACGCTACCGCGAACAGGATAnGGCGGAATACAATAACGGCAGGCA
AGACGGGTTTTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 584>:

gnm_584

20 TAAATTTGTTGTTGTCCGATCCGTTATTGTTTCTGACTTGTATTTTTCCGTGAGT
CTCGCCCGTAAGGCGGAAGTGGCGGGCAATGCGTGGCGGAATGTGGGTAAAGGCGGCATT
TTGATTGTGCGAATGCTTGAGAACCCTCTCTTTAAACACCCTTGGATTTCGATTTC
AGTGCAACACTAGTGTATTAGTGSTTGAACAGATTCAAGAATAAAACACTTGGCGTTTC
GTAGCCAAGTGTTTTCTTGGTCTGTTGTTCAACTCATCTTGAACCCTGCGTATCTCCCG
25 ATCACTGATGTTACGGAAATCGGTTTCTTTGGGGAAGTATTGCCGGATGAGTCCGTGGT
GTTCTCATTCAGCCCTTTCTCCCAAGAATGGTAAGGACGACAAAAATAAGTCTCCGCTTT
CAATGCTTTGGTTATTTTGGTGTGTTGGTAGAACTCTTGGCGTTATCCATGGTAATGGT
GTGCACCCTGTCTTTATGTGCCTTTAATGCCCTAACAGCTGCCCGGGCAGTGTCTTCGGC
TTTGAGGCTATCCAATTTGCAGATGATGGTGTAGCGGGTAACGCGTTTCGACCAAGGTCAA
30 TAATGCGCTTTCTGTCTTTGCCGACAATGGTGTGCGGCTTCCCAATCGCCGATACGGGA
TTTCTGGTCGACGATAGCGGTCGGTTTTCTATGCCGACACGGTTGGGTACTTTGCCTCT
GGTCCATGTGCTGCCGTAGCGTTTGGCGTAGGGTTTGCTGCATATTCTGAGATGTTGCCA
CAACGTGCTGCCGTTGCTTTGTCTTGGCGAAGGTAGCGGTAAATGGTGTGTGGTGGAG
CGTGATCTGGTGGTGTTCACAGGTAGGCGCATACTTGTTCGGGACTGAGTTTGCGGCG
35 GATAAGGGGGTTCGGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 585>:

GNMHT04TF gnm_585

40 TATTTCCGGCGTGATGGAAATCCAGTCGTCCCGATGGCATGAACACGCCTTTTCGCTTAC
GCGATTTAGCAGGTCTTCGGTGGCGGCAGAGCCGATCAGGACGCGCCCTTTGCCACGG
GCTGTTTGGTTGCCTTGCTGTACACGGTTACGGTGTCCATAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 586>:

GNMHV42F gnm_586

5 GCCATTTTGTGGCATTGTTTTGCGTATACCGTGCAAGATAGCCATAGGGGATAACCATTT
TGGTGCCCTGAAAATCAAATGTAACCGTATGTTCAAATCCTGTATTGGCTCGGGATTGT
TGAACTGGTTTGTTCATTAAAGGGTCACATGAGGGCATAGTTAAACACTCCCCATTAA
CCAAATAAAAGTTGATAAATGGGAATAGCCTATGGGCCCTAATTTCAAGCCTAGGAAT
TAGGTAAAGGATATATTCCTGGGAGATACCAACTCCTTAGGTAAAAATAATTTACCAACC
10 TTTGGCACCTAGGGATAAATTCCTATACCTAACTAAACCGGGGGGAAATATATTATCCC
AGGTGGAGGGGAACCTTTTCCCGGTTCCGGCAGGATAGGTACGGGGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 587>:

GNMHY50TR gnm_587

15 CTGCCGAAGCCGTCCGCCTGAACCGCTGACACACGGCGCGCTGGACGTAACCGTCGGCC
CCTTGGTCAACCTTTGGGGATTCCGCCCGACAAATCCGTTACCCGTGAACCGTCGCCGG
AAACAGGAATTGGTCAATAGTCACTTGCAGCGCGCTTGGCGAAGTCACCGAATTGAGCTTC
CCAAATGGTCACTTTGTACGTGCGGAGCAAGCAAAGCCGTAATCGAACGCCATCACGGC
TTCTTCGTTCAAATGGAGTCGATAACCAGGAAGTCCGCCATGCCTTCGCCCATATGGCG
20 CAGAGGAACATAAGTATCGTTCGTTCCCAATTTTCGCGGTTTTGATCGTGCAATAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 588>:

GNMHY77TR gnm_588

25 CAATGCATTGGCGCGGTGTGAATTACCAAACGCTGCAAGGCCGTGATTTGCTGTTGGA
CGACAGGCAATTCGGCGTGATGATGAAAAACGGTTACAGCACGCGTAACCGTGAATGGAC
AAATACTCTCGGTTTCGACATAAACATTCAATAATAAAACAAGATCACAATAAAAAA
ATAATGAAAATGAAGGATAATAGGAGGGTTAAGTTATTTAATGGGACTTGTTCTCTAT
GAATCATAAGACACCAAATAATCCATAGTACGTTTAGCAnATAAAACTACCGATGCCTA
ACCTCTTTTTCTCAGAACCTATTATCATTAGAATTCTAAGTGGAAAAATAGAATTAATAA
30 ATTTTTTCTTCGCTCTGTCTGTTAATGTATCCTTAGTTTTCCCTAAAAAAATATAAACA
TATATATACTGCACAATATTGGTAATAAATAAATAAAGCGAnAGGTAATTAAATTGAT
AATTGTAAATTATATAATAAACATACGAAGAAAAATATTATAGATGATTGCTATA
CGAATAAAAAAATATCCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 589>:

35 **GNMHY94TR gnm_589**

GCGTGTGGGACGGCAAAGCCTACGACGACAACAGCAGTTCCGCGACCGGCGGCAGGGTTC
AAAACATTTACGGCGCCGGCAGGCTGCTACGTTTTCAGCTACGGTTTCTTTTGACGCAA
AGGTTTGATTGATTGGAAGAAAGGTCTCCCGATTGCCGAGCATCGTTTGTAGGCGGCGT
GGCCGGTGCAATTATCGGTCAGCTTGGTTTCCAAAGATATTCTGCTGGCGGTCGTGCCGGT
40 TTTGTTGATATTGTGCGACTGTATTTGTGTTTTCGCCCAAGCTCGACGGCAGTAAGGA
AGGCAAAGCCAGAATGTCTTTTTTCTGTTTCGGGCTGACGGTCGCACCGCTTTTGGGTTT
TTACGACGGTGTGTTTCGGACCGGGTTCGGCTCGTTTTTCTGATTGCCTTTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 590>:

GNMIA39TR gnm_590

5 TACCTGCGCGCGTTTTTCGACGGCGGAAGGCAATGTGCGCGGCGCGAGGTCATCGGTTTT
GTCCGTTTCGACCGGGCGTTTCGACCGGGCCGACCTGCATTACGAGGCGCGCATCAACGGG
CAGCCCGTCAATCCTGTTTCGGTCGCATTGCCGACACCGGAATTGACGAGGCGGACAAG
GCGGCGTTTGCCGCGCAGAAACAGAAGGCGGACGCGCTGCTTGC GCGCTTGCCGCGCATA
CCGGTTACCGTGTGCGAATCGGATTGAAGTTTGAACCGGCGACGAAAACAATGCCGCTG
10 ACGACGTGTATGGCATAGCTGACACGCTGAGCCTAAGTGATACCGATAACGAGATTTTA
TTTACATCTTTATAGGCGAGATCCACAGATTGGATAACCAAATTTCAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 591>:

GNMIA50TF gnm_591

15 CCGCAGGTTCTGGCAAAAACCGAAAACTTTCCAAGGCGGGCTCGTTGGGCAAATCGGAA
ATGGAACGGTATCAAAATTGGGCATACCGCCGCCAGCTGGCGGATGCTGCCGATGCCGCC
GCTTAGAAAACCTGCCTGAAGCGGATTCCCGACAGCCTCAAAAACGGGGAATTGAGCGTA
TCGGATGCCGAAAAGCACGAACGCTTGGGACTGAATGCCGACGCGGCCAAATGGGTCAA
CAGCATTAT

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 592>:

GNMIB26TR gnm_592

25 CTCGGTACCTTCGTAATATTATGAGCTATGAATTCGACCTCGGTACCCTGTGCACTTTCA
AAGTATACAACCAATAAATTAATAAAGGCACCAATAACAATAACGCGCGTAAGC
ATGCTCATAGAACCTTGGTTCGTCAAGTGAACAGCTTGAATACCCGAAGGAATACCT
GAAGCAATACCTGCCGTAATGATTAAAGAAATACCGTTCCCGATACCCCTTTCAGTAAT
TGCTCCCAAGCCACATAAGAAACATGGTTCCCGTTACCAAGAAACTACCGTGGAACA
TGAAACTCAAATGAACCTGTACAACAATTCTTGCTGAAATACGAAAGATGCAACACCT
AGACTTTGAAGAATTGCTAACAACAGTACCATACTAGTATATTTTCGTAATTACCTTT
CTACCAGCTnCCCTTCTTTATTTAAAGCCTTCAATGATGGCAAAATTTTCAGAAGCGAGC
30 TGTACAATAATAGAAGCTGAAATATATGGCATAATTCCTATTGCAAATATACTAAAGCGC
TCTAACGACCCACCGGAAAACATATTCAATATTTCCAGGATGCCGTTTCCAGCGCTTTCG
TATAATTTAGCTAAAGCAACAGCATCAACTCCAGGTACGGGTATATGGGCACCAATTCTGA
AAAACAATC

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 593>:

GNMIE10TR gnm_593

40 AAAAAGTGGTTTCAGACTAAGAATGACGCAATCGGCATTTAGGCCGTCTGAAATCAGAAG
TACCGTTTCCCAATATCGAAAATCCGCCATGCGGCTAAAAATACTTCCTTCATGGAGCAG
AAATGACTTTGTTGAGCTTATTTAATCCGTTGCAAACCTGCCGGCATGGAACAAGAGTTG
ATGCCATTAAATCGGTATTGCCTCTCCCGATACCATCCGCTCATGGTCTTATGGCGAAG
TCAAAGACCTGAATCCATCAACTACCGTACGTTCAAACCTGAGCGTGACAGTTTGATCT
GTGCCAAAATCTTTGGCCCGGTCAAAGACT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 594>:

GNMIF19TF gnm_594

5 ACGGCTTGTTTCATGGTTCTGCCTTTCAATGATTGTTTTGAAAGCCTGATTTTGACACCAT
AACTTCATGCGCTCAATTCTTAAACAGAACCGCCCCGATTAATACGGGTACGGAAACGCC
GAGATAACAATAAGAATCCATCATTTCAAACCTTTTTCAGCAGGGACACATAGTAAACG
GACGCGAGGATGCCGAATACTATCCAGCCTGTTCAAGACCGCTTGCACGTTGTCCTTC
GGACTGCATTCCGCCAATAAAAGCCTTAGCGGCTGACCGTCCGACATCTTCCACAGGCTG
10 CCGTTATATCCGGCCTGACAATCTGTCCGTTTCTTTGATTCTTGGTGACTACCAAGCT
GAAATACAGGTTTTTCAGCCTGGTGCTTCTCAAGACATTTATTTCCGACTTGGTACAACAT
GCCGTCTTACTTCACCACTCTCTAACGATGGGAACACAAAAGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 595>:

GNMIF67TR gnm_595

15 AACTTGTATACAAAACCTACAATATTGTCAATATCGGCAATTCCCCCATCAAAATCCGCC
AAATCAAAAATATAAAAAGGGATGTCTCGATGGGCATATCGCGTATTACTTGTTCAATC
CATAACTTGAATTCATTTAAATCAATAGACTGAGAGAATAAGCATTTAATTGCAAATCCT
AAATCATCACTATCCTCTTTTATGATTTTCCACATAATTATCTTCTTTGCCGTCAAACG
20 CTCTTTTAGTTACCCGCTTTATATCAAAAATACCGTCTGAAAGACGAATATCGTTTCAGA
CGGCATTTTGACTGTTTAAAGCGGAGGAAGTTCTACAAACGGCAAGAAATGCTGAAATTT
CTGAAACATTTCAAGATGTATCTTAACGCTTTTACTGCTTTTTCTTTTGAATACGCAG
ATCATACACATCTATCCCCCTTAAAACGCAATGTGCGTCAAGGTATTTTTTTTCGATT
TGATAGTCTGCACATTGAAACAGAACCTACAGTATTGTCAATATCGGTAATTCCCCCATC
AAAATCCGCCAAATC

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 596>:

GNMIG49TR gnm_596

30 GGTCTTCGCCCTGGTTAACCTCATTAGAGTCTCnCAAAATGCTCCGGGCCTACCTAGTC
AATCTAGTCACTCTCCGAGCCTCCGCGCTGCCAACCGTCGTGCAATCAGCAATACAAAT
ACTAAGCCCTCCTGGGCTGCTATCATTTCTAGCATTCAAACCTCGCTGCTTTCAGGGGTACA
TCCTTGTTAAAGGAGGTTATTAGTGTCAAGTTCAAATGGGTGTTCTCTCGTCAGCGGGGCC
CTCCTCCGAAACAACCTGGGCCGTAAACTTAAGGATTCAAGCCCTGGCCTATGGGTCTTC
ATCAAAGTCAGGAGTGCCGTCAAATGAGTACCTGGGCTACTCT

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 597>:

gnm_597

40 CTACTAACCAACAATCCCATCCTTCCGTCTATTGGGGGTTCTATTCCAGGGTTATCTTCGA
TTTCTCAGCGTAACCGCGCTTTAGCCAGACGTGGTCCGAAACGACCAGACCAAGCGGCTC
CTCCGAAGTCGCTTCTTCCCTCGTTTCAGCGGGCCAAGCGTCTAAACGGCCAGGGCA
CGGCCGTGGGCGACCGTGTAAACACTCCTACGGCTTAGCTGGGCGTCGTTATCGGCGACC
AACTCCTAACTACCTGCGTCAGTAAAGTTGCAGGCGGCTTTAGTATCTTCTGCATAGTCG
CTTTTAACCTAATAAGATATCTTCCGTACCCGCCTCATCGTCAcATCCTGGGCCCGGG
CAATGCTGTCTCGAACGCACTCTCGTCTATAAAAGTACATCCTTGGTCCTAGTCCGCGG

5 TAATATGGTCAGCCGTA CTTTGGGTAGATGGGGTATCATAGTCTTTCCGGGCGGGCTTCT
CTTCCAACCTAGAGGGGTATAACGCCTCATCATCCTAAGTACCGGAAGTCCTACGGCTAC
GGGCATCCTCCTCTACAACCGCTGCAGCATCCGGCTTCTGTTCTATAGAGTAAATGGTAG
GGTCGTTAGCGGTACCTTCCCTGGCACCCACAGCTTCTTCCGCGTCAACCGAAGCTTGGG
CTTCATTAAGATTATACCTCTCCTGGTGGGCGTCTGCTATTCAAAGACTGTACGGTCAT
TAAAGACCCCCTGGTTCTCTGCTTGGGCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 598>:

GNMIG51TR gnm_598

10 TCCTGTCCTATCCGTACCGGCACTTGCTTCTTTAACCTCTCCGAGTCAAACACTCCTGGG
CTTTCATCCGCAGCGGCTTCGGCAGGGGTTTCGACGGCTGCTGCTTCGGCATCCTCCTAG
GCATCCATCCACACTTGATTTCGTTCTTCAGGGCTCTCCTCCTAGGTACCTGCTTCCGAA
GCGGGGCTCTCCTCCTCCCTACAAACCTGGTAAGCTCTTTAACGTCCCAACCCACCTCC
15 GAAGTTGCTTCTTCACTCCGCTAGGGCTTAGAGGCTTCTCAACCTCGGCCTCAGCTTTA
AAGTCTCGGAAGTTCTTTCAAATCTCTCTTCTCGTAACTACCAGGTTAGCTCCGTCG
GGGCAAACCTCTCGGGGTACCCAAAAGCTCGGTAAATTTAACTTGCTTTCTCCCTAAGA
TCCTAGTCTTCTGGGCTTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 599>:

GNMIG53TR gnm_599

20 AAGCACGGGGCTTGCCGGTTAAACGGTGTAAGGTTAGGAAGACCGGGGCGTCGGTCCCT
AAAAGCGCGCTGCGCAGGCAGATCAAATCAACGGGTA CTAAGTGAAGAGCCTGAAAGG
TCTCTATAGTGAAGATAGTAGACTGATCAGAATAAGTTCGAGAAAAAACTGCGTACCGGG
25 TATGGCGGTATCCAGAAGACCAAAGAAACGACTCCGGGCACGAGGTCCGATGCGAATTCTG
AGAAATTGGATTAGGGTCTGGTAAACATTCAAGATCCTCATGGGATTCTACTATTCTC
ATTCTCGGGCTTGGGCTCGCGTTCTTAAAGAATGGGTAGTGTGCTGGTGATGGTCTTAGT
AAATAGGGTGAAAGCGCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 600>:

gnm_600

30 TCATTGCTACCTAGCTAACTGGCCTATGCCTTCGTCGGGGATAATCGTCGCATGCCAAA
ATTTGCCTCGGATTTAATGGAAGTCTTGGCTACTATAGTTTTTGGGTCTTACTGCCTCGA
AGACTCAACACCTTTCTATTAGTCTTTGGTTTAATACGGCTCTACTTGCAAGCCTCAAG
CCTCTTGCAAGCTCCGAGGGGTGTTGGATCTAGTGCCTCCGAGGGTATATTCTAGAGCCG
35 CTATGTGTACGATAAGTGCTGTGCAGCTTCTAGACGGAACCTACTTTTCATATTTCTTAA
TATTTCTGCATCTCTTTGCATCCCTGGCGTGCTGTTTCCTAGTCTGGATACATAACTGC
GCATTCGTGTTCCCACTGCTAGCGCGTACACCGGGGTATTTCGTAGTATTCAAATCTCTCA
CATCAAACCTTGTGCGAGATCTTGAGGGGGAGACCGGAAGCGTAGCAGAAGAAGCCGGG
TGGACATCGTACCGCCTATGGGGTCCCAAAGCGCTCTCCAATTTTGAGGGCGGGAGGGG
40 GTGAAGATAGGTAAAGAGCGAGTTCTGTAGCACATAAGAATTTGcAGAAAGCTgGTAAG
AAGAGGCAAAAACCAACGAGCAGCAGGTAATAGGGTTCGCGTCTTTGGAGGTTTGGGG
GGCTCCTAGGGGCTTGGTTGCGGGGGCTGATTTACAAATCTGCCGCAACGAAACAGC
TGCAACAGTACGGCCCGCTATCAGCCCCGATAGTCAATGCCAGTGAATACTCCGAACA
GTTGGCACACGGGGTCTTTTCAACAATCGGGGTTAAGCAGCACTATGGGGAACGGTGCT
45 GAGCGCTCTCCGAGGAGTTTCGAGGCATCTCCCTAACACTAATGTCCGTCTTCTAGAT
ATGAGGTGTACAAGCATGGCCGGCACGATGTATTACGTATACAAAACAGTGGATCCAGC

CTAGCAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 601>:

GNMIG55TR gnm_601

5 TCGTTACTAAGTGGTCGCTTACTCCTCTACGGGGGTACTCAAAAAGTTAAAGCTA
CTCTCTATAGCTTCTGCGGCGTCCCTACTACCGGGTCCAGATCGTTCTTAAAGTCTTCT
CGATTACGTACAGGGTCTTCTACAGCCCTCCGAGGTTGCTTCTTTAGGGCGAATTCCG
GTGCTTTTCATATTAGCATCAATAACCTCTACGGCGCCTGCAAAGGCCAGGGTCCGCC
CAAATCTCTTTCGGTCTTCGTCTCTAGTTCTCATAACCGCAGCTTCAAGTCAACTCCG
10 GCAGCTATAGGGTTACAGCTAAATCCCTGCGGGGCTTGCTCTAAGCACTCTCTGCGTCC
AATACTTCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 602>:

GNMIG56TR gnm_602

15 GGTGCGTTCATGGTAAACTTCATAGAATCTAGAGGGGTAAATGCAAGGGGGTACTC
GGGTGGGAAGATCTGGCCGCTCCCTAGGGGTTTTGGGGGGCGTCCGGGTAGCTCCT
CCAACGTCAAGCTCGGTCTTTGCGAAGTCTCCTCCCTGCGAGATTCTCTAATTCTTA
CCCCACCGCTGGCCAAACCGAGCAGGGTCTGGGCCTGGTCTCGTCTCGGGCGCTTAGTT
AGGTGGGACCGTTGTACAATTGGCCCAATATCTCCACACACTTACAACTGCAGCACGA
20 ACCTAGACGCGGGTAGCCCGGTTTGAATCGAACGAGGGGGCTGTCTAGGGGCGCTTCT
GGTGCTCCTAACTGTGGTATCCAGGGGTGGCCGACCGCCGCTAAGCCTCTGCACCGG
TAACAGCTGCTGTGGCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 603>:

GNMIG57TR gnm_603

GCGGCGGCTTCGATAATATTACTCAATTCTTGGTCAGAAGCCGGGGCTTTCGAGACCGCG
GCGGCTTCGCTACGGCTACGGCTGCTTCTTGGGGGGCAGTACCTTCTTTCGCTTGCAAA
GCGTCGGATCCAACCACGACCTAAGAGTCCAGCGATTGGGTCGAGTCTCCGAAACGTCT
TCAATCCAAACCATCTCCCGTTCGGTAGCCTTGGATTCTAGTTACTACGTTTTACTTCA
30 ATGGCTGCGTTATCTTCATGCTATTAGCGTTGCACTTCGTCTACTAATCGCCGATCTA
CCGGCGTCGCTGTAGTTATCCCAGGGGTGCTACTACTACTTCTTTCGCTTCCGGATCA
GCCCCTCCAAACAGCGGTTCTAAGGGCAAGTCCCGGGCGATCCCGCAAATCCATCT
GGCTGGTAGACCGCTTCATACCTATTATAGCCTACGAAGTTCTA

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 604>:

GNMIG58TR gnm_604

GTCCGATTTCCCTGGGGGGCCGGGGCTATTGCTCCAGGTCAGGATCGTACCCGAAAGTC
GCTTGGCGCTTAATTAGGGCTCGGCCGAACGGGGGGGTGGTCTAGTAAAGATGGTCA
GAAAGGTTCTATTAGCAGGGGCTCGGGGGGTGTCCCGTCCGGATCTTCTCACGGGTC
40 TTAGAAATGCTTTGGTCTAGTCATCGCGAGTATGGGTATATTAACGGCTCCCTCAATA
GAGTTAGTATTAGGGGCTGGGTGCGGTACCTCTAATAAATTCGCAGTCAATATCTACC
GTACGGCGTCTTCAGCCTCTCCGCAAGTACTCTCTCTGATCCAACACGTTATCTTCA
TCCATACATTGAAAAGTATGGTCTGCTTCATTGCGGTCTCCAGGGGCTAATCCTGG

TGGTCAGCGACGGTCCTAGTCGTTACTTTCCGGCGCTCTTCTAAAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 605>:

GNMIG59TR gnm_605

5 GTTAGTTCGGGCTTCAGGGTCCCAAGGGTTAAAAGTGCGGCCTCGGCTCTTACGGGTAAT
GCTAAAGCTCTGCTCATTTCGAGTCCGGACTTCCTGCGGGGTCTAAGCTTCGGCAGCTGC
TTCAGAAGGGTCCTCCCCAGGGGGGAGGCACGGGCCCTCGAGGCGGTAAATGCTCTTAAT
ACCCGCTCCTCTATCCTGGTCACCGTCCGAGGCTTCTTTCGCGTGGTGGTTATCATTTCGT
GTGAGAGCCCAAATCAATACATTCTTTCGCGTGGTAAGCCGTACAATATCGTTCTCAGAT
10 ACTTTGGTCATTAAGATGGGGATTTCGCTTCGTCCCGACGGGTAATATGGCTACCATGGCG
CTCATTTCGATTCCGTGCAGATACCGTCCTCCTAAGTCCGGTGGTATTCTTCTAGTCCGG
GCTCTTAATACCAAAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 606>:

GNMIG61TR gnm_606

CGGTGGCTAATAGACCACCGACGCCTCCTCCACCGACGTGAAAACGGTCACCCTCATGGT
GGTGGTCGTTAATCTCGGCTCGTTCATGCTCTTCTTCCTCCTAACCGGCGACTTCTTGGT
GGTCATCAGCAGGGGTCTTAGACTAGGTTCCCCCGCGTCGACACTTACAACGTAGTCCT
20 CACCAACACCTCGGCGGTCTGGGCCGACGCTCCCGGTTCGGCTTCGGGGCCTCCAGGG
GGGCTTGAGTAGCTTCGGCAGCAACCGCCATGGCTTAATCGGCCCCAGCTTCTACAGCAA
CATCTCTAACCCGGGAGTGAGCTTGGCCTCCGCCCAAGTAGCCTATCATACCTGGCCCG
AAGGGGCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 607>:

GNMIG62TR gnm_607

CGAAGGCTTGGGCCGATCAACATAAAACATCGAGGAAGACAATTGAGCCTGCTGATCCTC
GGCATACGGTCAGGAGCTCTTGGAGCGTTTCAGCATACTACAGGTTTTCAACGTAAACAAG
GCAGCCAAACTTAAAGCGGAGACCTGCCTATCGTTCGGGGCCAAGGCCTAGAAACAACAT
GCAAGAAAGGAACGGTGGGCCAGGCCAAGAAGGGGCGGGGAAAGACGGCTATAGGGCAGG
30 CCAATCCTCCACAGGCGCGCGTAAGAAACCGCAGCAGGGTACAAAGCCCCTGCAGGGGG
TTTGGAGGTCTAAGGTAAGATAAACAACAAGCCAGCTTAAAACTGCCAACACAGGG
GAGTCGGCAAACGTACGCTTAAGTTTCATAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 608>:

GNMIG63TR gnm_608

GTTTTTCGTCCTTGGCTCTTCGAACATTCACGCTAACTTGTAGTTTATTCTCTCTGAGGAC
CAAAAAGCTCAGCGTCACTTTGCGGTCCATGGTTTGGTTGTTCATTGTAGGGATTAAT
TCTTCAAAGTTATTCTTAAAAGGGTAATTTCTCTCAAAGTTACTGGGTATCTGCGGCGT
TAGTAAAATTCTCCGGCGTTTCAACATGCTCTTGAGGCGTCTAAGTCCTCTATTATAA
40 GATTAAGTGCCCTAAACACTACAGCAGCCAGCGCCAGCAAAGTCGTCAAAAACCTTAAAG
TCTTAAAGTCTCTCTCTAACTTCGGGGCGAGCCCTCTCCTCGCCTCTCCTTTGAAATT
TAAACATCGCCACATCCGGGTTCTAAGTAGTAACTTCGTAACCCTGGCCCGAGCCAAAT
TGCTCCTATCGGTCCGAGCTGTCAACAACGAGCCTCCAACA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 609>:

GNMIG64TR gnm_609

5 TAGGGAAATACGAAAATTCCTTCCGGTGAAAAATCCGGGGCTTGAGGGGCTTGAAAGCT
TCTTCAGCCTCCTCCTAAGCTCGGTTCTTTTGGTCTCTCTTAAGTTCTTGCTTCTCTTG
TTATTAGTATCTCTATCATCCCGGTCCGGTTTCAACTCTCTAATATCATATCTTTGGGCT
TGGTCACGGTGGGGGTATGGTTCTTAATATCGTGGGTCAACTGGTTGCTTAGGCTGCAT
TGGGGGCCAGCTCTATCGGAAGTAGTCGGGCTCCAGATCCTGCTTAAGTCCTCTAAATCC
GCCTCACCGTGGCCGGTACTCGGGCTACGCTTCTTAAATGGTACTCTCAAAGAAGCT
10 TCGTCTTCCGCGCGCGGGCGTTAGATATAAAAGAGCCTTCTGCCTGGTCTTCTTCAGCA
CTTACTTCTCGCCGGTACTGCGGTTAATATAGACTCCGCTTCATGGGCCTCTCCTACA
AAGTTATCTTTGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 610>:

15 **GNMIG65TR gnm_610**

GTCCATCCCAAAGGTGGTCTTGTTCTTTCTTACTAGTAGAGTCCGTACATTGAGGGCA
GCCTGGTCGACCTAGAATTGAGCTTGGCCTGCTTCCATCAATATCTCTGTGAGCGTCCCA
GCAGCTCTTTGGGTACTTTCAAAAACAGCTTCAGAGGCCTCCTCCGCCGCGCTCCTAGTA
GATCTATAGACCGCGGCCTCTGCAACGGCTCTCATCGCTTCCGTACTAATAAGGTCTTTA
20 TAGTCTTCAGCGTGGGCCGCTGCTTCTGCCAACACTTCTACCTAATCTTTAGTTCGTTG
TCCGAAGCTGGGTGCTTTTCACTAAATTCCTAGTTCTTACTCTTGCTGTTCTTCTAGTCA
TCTATACCGATCATATCTCTTTAGATGGTGCAGTCTGCTGGCTCTCGTTAAGCGGGTCCTC
CTCTCGAAGGGTAAGT

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 611>:

GNMIG66TR gnm_611

AAGTTAAAAGTGGTAATAATTGGCCGGTGCTTAAAAGAGTTAATACGGGAAGTTCTAATC
TATCCATATTCGTTCTTGTTAGTAAATACTCCACTGTTCCAAGCCAACTTACATCGGTTG
TACCGGTTCTTATATTTGGGTATCTACAGAGCTTAAGCTTGTGGTAGCCCAACCACTCC
30 CTAAATTAGTGGTTCCTACTCATGGGGAAGCCGTCGAAAATGGCGTTCTTCTCGCCT
GCATTACTAAAAACATTATGGCGCCTCCTCCGGTGGTTAATATGGGTAATAAATGCGGCC
TCCTGGCCATAGGTAGATGGGTTCTACCAGCAAGTACA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 612>:

35 **GNMIG67TR gnm_612**

TTATACGCAGATTGCGGGTCTAAATGTCGGGCTCTACTCGCCAAAGCGGTCTGCCAG
GCTAATACCTGGGACAACCAGATACTTGATCGGTAACGATTCTTTAAGCTACCC
CTAGGCTTGCTGGGCGGAATCTTGCTAGTCATCTAACTCCGGGGCAAATTTACGGCTCTC
CTATCCAGCCTCCTAATCGAGTTATTTCCCTTGCTATTAAGTATGATGATAGTAGAGGCA
40 CATAGTCGCGTAGTTGGGCTGGGGAATACGAGTGTAAGAAAAATCAGATGGGGGCGGG
TGGGGGAGGGGCAAGCATGCTCGGGGCAGCCGGGGAACAAAACCTTCGTGCAAACGTTA
GAGTGCTTCAGGTAGGTCAAGTAAAGCGGTACATCCTTGTAAGTCGGTTCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 613>:

gnm_613

5 AATGTAAAAAATTCCAGGTTTCTGCAAAATACCAAGTTCACGTGTACCCGGCACAAAA
TTCGGGGGTTTCAGAACGGGTTTCGATTACATATTGACAGGTTTCTTGCTCTCCAAGCA
TCAGAGGGTACGGGGCGCGGGGGCAGGGGGGCTCCCAAGCATCAGAAAGCATC
AGAGAACGAGGGGGAGGGGAAGTTCTTAGAGGAGACGCCAGGAATAAAAATTACGATCCT
CGGCTTGTCTTGGACTGTAAACACAATCAGGTGTGAACCGCTGCAACTATTAACGCAAGT
10 CCGGTTTCGATGAGGGCTATGCGTGCTCCTGGTCGTCTTGGCGTTGCAGGGGGCGGAAGTT
ATGAGAATCTATTTCTTAAATACTAGAAACCTATCCCTACTTTTCAGGGCCAGGCATTGA
GGGTTTTTCATATTTGTCTTCTACTGTCCGTCTTAACTAACAGATCTTGCCCGATTGG
GCTTGCTCTCGTCAACTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 614>:

gnm_614

15 AAAATGGGCAGTGTGGGCTTCGGGATTATCAGCCTAGTCGTGGGGAAGGTCCTACGATTG
GCCAAATCCTTGGCGCGCTGCAGTCGAGGGCAAACCGCTACTACTAGGGTCCTACCCCG
TACCGTCGGCATCCTCATCATGGTCAGCGTCGCCCTGGGGGTAAGGGCATCTAAGCTCAC
CTCCTTCAGCTCCTTCAAATTCGGAAGTCTGATGGGAAGCTGTAGCGAGAGATGTAACT
20 GCGCAAATCAAAGGGTAAGATTGCGAGGCGAGGTGCAAAGAAACGGATAGGTTATGAGGA
TAGTGAATGATGGCTTCTGGAGGGCAGAGACAGCAAGGGGATGCGGGCTATACAGGGTTA
AAATGGGGATTAGTAAGAGGGCAAGGGAAGGGGAAGCAGAGGGGCAGCAGGCTTAAT
TGCTGGCGCTCGAACGACTAAAGAGTTAAGAGGGGTAGGATTGGGGGCGTAAAGAACGGG
CACGGGAACATGGCTGCGAGAACATACAGAACTCGCCAGCGGGGGGCATGGAAGAAGAGG
25 GTGCGCCAGAATGGGCTGCGGGGTGACGGCGTGTAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 615>:

GNMIG70TR gnm_615

30 GTCCGATTTTCCCCAAAACGACGGCCTCAGGGTCTACCTGGTCGTTAACGTGGGCCTCA
CGAGTAGTCTCTTTTGGGGCTTCACTCACCTGGTCAGCAGCGTCTCCTCTCCTAGACGGG
TCAGTACCTCCGTTAGACTCCTGGTGATGGTCGTCACAGATCTGGCTCATCGCTTCAGCA
CCAGCCTGGCCCTAAGGGTCGTCGCGGTCTTGCTGCAATAAAGTTAGTCTTATTTAAG
TCCTACCGCGTCGCTTCGTCCTCAGCATTACCAAGGGTACATCCTTTCTTATTAGCGTCA
GCTTCATTATCTTCAATATCTCCTCGGGCCTCCTCCTCATCAACCTCGGCTTTCCATTCC
35 GCAGGGGAGTCATGGCCCCAGCCGGGTTGCTTCGACCTCACCTCCTAATTCTTGCTC
TCTTCTTCATCCGCAACATGGGCCGGATCTTCTCATCGAGCTCCTCCTAACGATCAGCG
TCGGCTCGGTCTTGGGGCCGCGTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 616>:

GNMIG71TR gnm_616

40 CCTGAAAGATGTAGTAGTCATTTCAGACGCAATTACGATTTCGCACCCAAACCTCAAAACAA
TTTTCACCCACCCACGCAAAATACAATTGCAATTGCAGCTAGATAAATACGCCCACTCTTT
GACGCCGCGCATGCTCGATTGGGGCGAGAAGCCCGTAATCATGGATAGGTACGACTCACT

GGAATTCAAGACCCACCTCGACCCAAATTCACGTGGAAGACCCTCAGCACGGCTGCCCCG
CGACATTTCAAATTCACGCAGTGAGTTAGCCTTACCGGCAACCGCTTCGAATACCGATGC
CACCATTCAATTTATCTAGCGGCTAAAAGCTCCCCAGCACTGCGCCAGACCCCGCAAACC
TGAAATAAATGTCCACAGACTGCCGGTGTTCCTCAA

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 617>:

GNMIG73TR gnm_617

10

GGGCGCTCCAGGTAAAAGCAAATTTCCGGGGGGTCCATAGAGGGGGTGCATTGAGGAAC
TAGGCTTGAGTTTCTGGGCGCCGAGACGCCAGGAATAAAAAGTACCATAACCTCATCAAC
TTCTACATACGATCCTAACCTCACCTAATCTGCGATGCCGGGGCGGAAGTTATGAGAGA
TCCTACCCACCTCCCTGCCGGGCGGGCCTGCCTCCTCCTCAGCGCTCCCGGCGCCTGCTG
CTCTCTTTGCATGCTTAAATGCTTTTAACTCGGAGCTCCTGGGCGGGAGGATATGCGG
GGGGCTTCTACGAGGCCGCGGTCCCTCCTAGCAGGTGAGCGAGGCCGAGTTTCGTTGTCG
TAAGTGACAGCGGCCTCCGCGGTCTCCTACTTGCGGGCTTCCTACATC

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 618>:

GNMIG74TF gnm_618

20

GGCTTGGGCTGATAGAGGGTGTGCAATGCGCCGAGTGCTGCATAACAGGCTGGAATGCTG
TTGACAATGACGCGAAACCGTAAATATCCATAACCTCGGCAAAGCGCAGCTTTTTCGCC
ATCATTTTCTGATGGATGCCGTACAGGTTTTTTCCTGCCTTTGATTTTGGCCTCTATA
TTGCGCCTACCAGCCGCTGGCCGAATGCGCGCAAGACTTTGCCGACAACGTACTGCCGG
TTCTTCCGGCTCTTGATACATCGCTCTTTTAAAGTCTCGTAACGGATGGGATGCAAGTTA
TGGAA

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 619>:

GNMIG75TR gnm_619

30

TCCCTGGGCTATCGTACCTAGGCGAGGCCTCCGCTGCAGGGGGTGGGCAAACAGAAAA
AATCTCTTAATCTTGCAATTTGGGTTTGCGGTACATCCTAGAGCTTCGTGCAACTGGGGG
CCACTAAATCTAAGCATTGCTTTTATAGAGTTCTCTCCTTTTCGTAGCCTACATAGGCT
TCTTGGTTCTTGCAATCAACCAAACTAATCTTGCTGTCAGTTTCTTCGACCTCCTAG
TAGTTGTGGTTCTTCTAATGGTTAAATAGTCAATAATGTAAATATGTATTCTTCAAAG
TAACTTTGCTCTATATTTCAATGTAGGAGTCTTCGTGAGTATCAAACCTCCTACCGCTA
ATCGGGTAGTCAAACCTGGTATTCTTGCTTTCTAAGCAGATCTGTCTCCTCACAGG

35

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 620>:

GNMIG76TR gnm_620

40

AAACTACTTAATTAGCAAAGTAGTCTGTACCCTCAACCTGATATTACTAACTAAAATGCG
TACTATCTACGTGAGGGCTGCAAACTATGATTCTTCTGATTTGCGAAAACACCGAGAA
AAGTTCTGGGTATTTGTACTTTCTCTTTGATCTCCCTGGGGGGCGTACGGGTTTCATGGGC
TCCCACGCAGGCTTTCTTTACGTCTCTTAAGTGCAGGGGCGAGGGTTAATGTTCTTATA
GACTTATTAAATGTACTCCTCGCGGTTAATACTCGCCTTCGTGGCTTCGTGGGTCCTCCA
GGTCCCTCGATTCTCTCATTAGTAAGCTACTACCTCCCCGTCTAGCATGCTTGGGGTC
ATAATTGGAAGGGTTTCGACTTCAACCTCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 621>:

GNMIG78TR gnm_621

5 GTCCGATTCCAAAGGGATTCTATCTTGCTTAGAATCCGCTCCGTCGCGATATTCATCAAC
TTAGCTTTCTATACCACTGCTGTGAGATACTTGAGTTTCGTCTACTCCTCTATGCTTGG
AGGGTTATCCTCACTCGTTACATTTTCGCTTCCAAGAGCAAAGTATCCCTAAGTTGCTTA
CTAGGCAGGGGGTTCACCTCCTACCTAAAAGGATCAGCAAAACGGGTAACGCGAGTACC
CGAAAAATCAAAGTTCTTTTCGTACCCGGGGAATCTTCCTAATCATTTTAATCCTACCT
10 GCATTCTCGATTAAGGTCTCTGGGGTCTGTAACCTGGGCCAAGATCCTATCTGGGAGA
TCCTCCGAGGTCATGAGCGTTCTAATCCATCCTCACTCTACCTCAAAGCCTACGGGACAA
TTTCAAAATTTTCAGGATTGGAGGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 622>:

GNMIG79TR gnm_622

15 TTTCTTGCGTTTGTCGTCGGCTTCTTCTTGCTATTAGTCGTCAACTTTGTAATTGTAATT
GTCCTGATGCCAGATGATGCATTCTTTGGGGTCGTGCTTAATTTAATGATATTCTTATTA
AACTTCTCGTTCCTTACTCTAGTCTTCCTATTTCGATGTCCTCGAAGTCGTCTGTCTGTC
GTTTTGATGGTATTTTCGTGCGTCAAATTAATGTGCCAGGCGTAGTCTTACGATTATTT
20 GTGGGGGTAGCATTCTATTGATAAAGATACGGGTGTTATTGGTGGTAGGATTAGGTAAC
TTTGCACTACTTGTGTTTGTCTACCGGGCCATCGAGATCTTCATAGCTTTTCGATCTAGTA
GTCATATTAGGAGTCCTCTAGTTGGCTTGCCCTCCTACGTACTGATTGCGCCTTACATG
CCAAAGATTGTATCTGTCAATCTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 623>:

GNMIG80TR gnm_623

25 GGGTCTTAGTTCGGGGTTATTAACGTGGTCCCAGTCCTCATTAAAACGGGCTCCAGCCCT
ACTATCTTTTGCTACGATCGTCGGGGTAGTCATTATAAAAAGTGGCGTCCGAGCCGTCCCT
ACCTGCGTCAACTCCTCTACAGACTCTACTATTATGGTATACCTCATAGTCCTCTCCAGC
TGCATTAATGTCAACGTTAGAAGTCTATTATGCGCGGCGTGGTTCGACCATAGGCTTCTG
30 GGCATGGCCCTCTCGGTGGTTGTAGTCTCCCGGGCGACTCTGGTCGAAATTATGGCCGCT
CCTAAAGTCGTGCTTACGGTTCTTAAGGTCGTTCTCGTTAAAGTAGTCATTCTGCTTAAT
AAGGTCGTGGGCGTTAGTCATGTCAGTACTCGGGTCTCTATTCTCGTCCAGATGGTTACT
AAGATGGTCTTCGTGCTGGTTCCGGGCATTACAAGTTACATCAGAGG

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 624>:

GNMIG81TR gnm_624

40 ATCCACCTCCCTCACTTCTGCCTCAGCCGGGGCCTAAATGTCACTCTCGTCCCTCAGGGT
AGCTCCATCTACTTCGCATGTTCAATTTCCCATCTGCCTTCTCTAGGCCGTTTCGCG
AGCTTTAAATTCACGGGCCCCGTCTTGAATCCATAAAAATTCCTTTTAAACCGGCGTTTC
CCTTCTCTCTGAGCCGGGGATCTTCGTATCTCGGTGGGTGCGAGCCAGGGCCCCAGCG
ATTAAATACCCGGAGACCTGGGTCTATTACAGGGGAGCGGTCTTGACAGGCCGGGCTCGTA
GTCTTTTCATTGATGCTAATCCAGAAATTGGCCGTACGGGCTTCGTCCGCGACACCAATA
CCTCGGCTAGCACCAGCGGAAGCAACATAGCGGCATTGGCGCTCATCCnCCACATAGTCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 625>:

GNMIG83TR gnm_625

5 CCTCCTCTCCTCGGCGGGCGTACTTACTTTATGGGCGTGAGGCTTAGGAACAAAGGCCA
 ACAACACTGGCTTCGTGTGGGCGGGCATTCCACTACGAATCAGAGGAGGATCATTACCT
 CCCCCAATCGAGTCGGCTATACCTCTCGAACCGAGGCCAACACCTCCACTGGAGTACCTA
 GGGCCTAAAGCAACAATAAAATCACTGCCACCCGCTCGGTAAATGTCCCTGCAGGGGGAT
 CCGGCTCTTCGATTGCTGCTTCAAATGCAGGCGGGTCGGCTCTTCGATGCTATTCAAAG
 10 CTGGGCAGCGGCCAACACAAGGATATCTAGATGGGCATTACGCTCTGTAAATCTCCCCA
 TCGGCAGCTCAGGAGTCGGCTTCAATTCGGGTAACACTTCCCTAGGCGGATTCAATTGG
 CGAGCATCAATTCGGGGGTGCGAGGCGTTCAACCCTAGGTAGGGCACC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 626>:

GNMIG85TR gnm_626

15 CTGGGCAGGTGCAAAAGATCATGCTATCCTCGGCCCACTGCCAGCGGCAATACTTTCAA
 TAGACATACGCTTAACATCATTAGGAACTTCAGCTTCTTAAGATTATTTAACTTGCTGC
 TAATTAGATCCGTACTACGCTCTTTGTCAGTTTCTAATAAGCTTCATTACTCGAGAACG
 TACACTTAAATTTGCAATAGAAATCATCCATACTATAAATCTTTCTTGGCTTCTTGG
 20 GGGCGTCTTCATTATAAGATGCCAAATAAGTCTAATACCCAGATAGATACCTCCGAAA
 ATGTAACCTTTAAATTACTCAGAAAAATCTTAAACAGGCCTCGGCACTCGAGTTAACA
 TACTGGCAATCCTGCGTCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 627>:

GNMIG86TR gnm_627

25 AACAGAGAGGGTTACACACATCCTGGCTAAGTATACACCTAGGTCGGTTCGGGATAAGAG
 CTCAGCATCGATGATTGCCGCTAAGAGGATGACTTAAAGGATTAAAGCTGAAGAAGCTAT
 GAGAATTACTGACGGACGAAGAGGTAGGATCGGGTCACAGAGTGGGTGTAGGTGGGCTAC
 AAATGAAAGGACTAATTAGAGGGTTAAAGGTGCTGAATCTCCAGCACTCGCTCT

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 628>:

GNMIG87TR gnm_628

TCTTCTGGGTCTCCGAGGCCAACCGAAAGGTCAGACCCGCTGCTTGGGCGTTCTCGAGG
 TTCCAAGCCGCCATATGGCCATCCCAACCCGATTTCGGGTCTCTCCCTAATTGGCAGAT
 TCTTGGTCCCTACTTTCCGTACCCTCAGGGTCGTAAACTTGGGCATATGGCTCCGAAGTA
 35 CTGCGGTGGGGGTATGGGGCGGCAGCAGATCTACCTGCGAGCTCGGGGTACTTACTTGG
 GCCTCGGGGTCTCTATTACGATCTTATCCGTGGGTAAAGAGTCATTGTATTAGGGGCT
 CTCGCCATAAATTCCTTACCAACCTAAGCAGAATGAATCTTAATATTCTTCTCGAATTGC
 TTATCTCTCCGTGCACTACTTCGGGGGGAAGCGTGGGGGTACAAGAGGTGCGGGTTACTC
 TCTGGGTCCGTGAGAATCCAGGAAGTTCTCTCCAGACTTTAGGnCGGTTAGAAGTGTAG
 40 TCTATCTCGTCAGAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 629>:

gnm_629

GGGTCTTCGTCCGTAATATAGGCTTCCGTCCCGGCCGTCCCTCTCAATACTAAAGTCTCT
TCAGGGGGCTTTCTGGGCACGGTCCCTACCGGGGTACGCTCGTAAACGTTATCTCCGAGG
GCAACAACCTTCTGGTCTTGGTCGCGGTATCGGGGTGAGGGGCCCTGGCATCCAAATCA
5 ACCTGCTTTGGTCATAGCTATCGTCTAGACTTCAGCGAGGTCCCTCTCACTCCTAATA
AAAGCCTGGGGGTGCTCCAGCGCTTCGTGCAAACCGGCAAGGGCTTCTCAACACCGGCA
AAACAGACAAAAATCTCGGGGTCAATTGCGCCGTACTCTCAGAGGCCTCTCCGTACAG
GTTACTGCGAGGTCTCCGGCGACAACCTCCGTACTCTCG

- 10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 630>:

GNMIG90TR gnm_630

TGGGTTTCAGATCTGGCTCTTCGACTGGATCTTGGTCGGCTGCCTAACTTCTGCGGCAC
CTCTATCTTTTACGGGGGAGTTAACTTGGGCACTACCGTGGCCCTAGTCATCCGGGGCCG
CAGCAGTCTCTTCGGCCGTCTCTTCAGATTCTTACACCTCCAATTTCTCTGGGGGCGAT
15 CCAAATCATGGGAATTAACTCCCAGTCATAAGAAAGTGCTTGGCCGCCGAAACCAGGGC
CTGCGTCCAAGACCTCGGCGTTATTGGCAGCGTCATACAGGGGCATTTAGCTTCTCTAC
TCGTACCAAGGCCCATCGCTTCGGCTTCGTCTTCAAAGTCAGCCACCCCTGTGGTGGGGAA
CACGGTCTCTAGAGTCCGGCTCCGCTGGGTCTGGGGGCGGCTACTC

- 20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 631>:

GNMIG91TR gnm_631

TGATCGGATTCTGTACCGCTTGTGAGTACCTCCAAGGCCCTGGCCGTCAATGTGGTAAAA
AAGATCAGCGTTCGAGCTCTTGGCGTTATCCATCTCCTCTACTCGACCGTCTCCTCCTC
CTTTGGTGGATTAACTTAGGTGTCTTTAATTCCTCCCTACTCGCCTCCCATAAAGTTCTA
25 GTATTCAATAACCTCAACGTAGGATTCTTAAAGATCTTCATTTTCTTAAAGCTTTAATCTA
ATGGCCAAATTGGCCGGCTTCTCATGGGCCAACTTACTAGTTGCTTCCAGAAAAAACATT
TGCAGCTTAAATGCAGCTACCTAGGCGTCCATCGAGTCGGTAAAGATGATTCTCAATGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 632>:

30 **GNMIG92TR gnm_632**

GCTGGTTGCGGATGGTGGGGATTATGCAAATTAAGCGGTATTAGTTACGCTCATAAATG
AGTACTAGGAAGCATCCGAATCAGCGGCGCGGAGGCTTGCTGGTGTGGCGCCTCCCGG
GGGAAATAACACAGAATTACTATTGATTTTGAAAACGCGAGTAGGCTAAATAGAAGCAGG
GGCCATAGAGGAAGATGGTTGTTGAGGGGTGCGGTTGACAAAGGGGTCGAGGGGAACA
35 TAAAAGGTAGGAGAACTAGTGGTAGTGGGCAACAAGAAAGGCAAAAGTACGGGGGTAAAC
AAACAGTTGTGGGTAAAGGTACAGATACTGATGGTCAGGGGGGCCAGGGGCATAGTAAAT
ACTGCAGGTAAAAGGCTGCCAACAGAATGATGGCGTACGCGGTAGAACTGGGGACACAA
TGAAGTAACGTACTC

- 40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 633>:

GNMIG94TR gnm_633

GCTTCTTTGTAAGTACnATGGTTTTTCGGAACCGGTAGCTTCTTCGGCACTAATACTCGCT

5 GCGTCCGCTCGGGCCCATCAGACGCTACCGGCACGCTCTTCGGCGAATCCGAGGTCCCTT
CCTTCGAGATCCTCCTAGGGCTCAGAGCCTCCCGGGGGGTGAGCCTGCTGGTAGGCCGGG
GCTGCGAATGTCCTCTCCTGGGCTTTCGGGCTCTCGGGGTATTTAACGAGTTCTTCAACC
GAAGTACCGTCCCTCCTAGGGGTCTGGCCCTCATGGCGGTCTCCTTGC GGCTTGCG
CCGGCTTCAGAAAGGCTTACTGGCGGCACGGGGGTAGAGGGAATCCCAAAAAGGTCTCTC
CCGGCTTCTTCCCGGCACGAGCAACGACGTCCGTTTCATCCGGCTCCGCTCCCGGCAGCG
AGGTCGAAATTCTTCTCGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 634>:

10 GNMI95TR gnm_634

15 TCAACTCCGGACAAAGCTACACGCTCCAGCTCCTAAGTACCCCCACGAGCGCGGGTAGTC
GAGGGTTGGGGGTTGGGGCCGGCAAATCCGACAAGTACATGGGAGGTCCCACCCCGCGA
ATTTGGGTTAAAGTACCCTAATATAGACCTCCGCTGGGAGCGCGTCGCAAATAGTAGGC
GGTTGGAGTCCGGGCGGGAGTACCTGGTCCATCCCTCCTCTCTTCTTCTTTCAGCGGC
TCTTCTCGCTTCCAATCTTCGAGCTTCGTGCAAACCTTCGTTGGGTACATCCTAGGCTCG
TAGGGTAGTTTGGGGGGCACTACCGTGGTAGAATTCTTCGAGGCCTAATAGGGCGAGAA
TTGCTGGGGGGTACTGTGGCAACCCTCCTGGTCTATCTTCGTTCTGCTCCTACGACAAC
GGCATTCTCGCTGGGCGTCCCTCTCCTGGTCG

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 635>:

GNMIH01TR gnm_635

25 AACCTCTAGGTACGTCCGACATTAACTCCAGGTCTGCAGGCCGCGCAGTGTGAGGTGTA
GGGCGGCGGTAGGGGCCGAGCGGTGAAGCAAGTGAGAGCTACCCCTCCTCCGGGCGTAA
GAGTGGTGCGCTGCTAGTAGTAAATTCGTGAGGCCAAACGCTGCTTTGCTTCTGCTATG
GGGGTACATCATTTGGAATTCGGGTGAGGAAAAGACTTAGGTTATGGGGTACATCCTAG
TTGGAGCGGGTTTCATTAAAGTTCTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 636>:

GNMIH02TR gnm_636

30 CCTACATCTACGGCTTCAGGCGGGCCGTCAGCCTCAAACCGGTGGGGGTTAATAACTTC
CGGGGCCGCTTGCTCCTTTGCTGCTGGGTCTTGTTGCTTCTAATGTAGGATCTTCTGG
GGCATCCTACCTCCTAGGGAGTGCCTGGGCAACCTCGACAAAAGTCTGCTATAACGGG
TGCTATTATAGCATCTCTAGCTGTGGAAGCCTCCTAAGTCCTAGTCCTAGCATGCGGGG
CCGCGATCCAAGTCGGCTTCGTAGTCGTAAATGTCATCATGGACCTAGCTGCTGCAGCTC
35 TTCATTATAAATGGGGTCTCTACGGGCCCTAAAGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 637>:

GNMIH03TR gnm_637

40 TTA AAAACTTTTCGCACCTAACTGTAAATCTAACAAGCTACCTCTCGCTGGGATTAGGG
TTACTGGACCTCCTAGTCTCCTATACCTGGTATCTTAAGGCGCAATCTGTTTCAACGTC
TTAGTGGCCCTCGCGCTAAAGTTTAAAGTAAATTGCGGGCCAATCCTAAACACGGGCTTT
TCTCTTGACGCGCTTTCGGCACTTGGTTCATTATTCGCGTAGTCATCCGCTCCTTC
CGAGCTCTGGTATTCGAGGTGGCCTCAACTGCGGCAACATGGTTCTTCTAGGATTGGAG

AAAAGAAAATAGTTTGTGTAACCTACGTGCAGAGCGGGCCAGGCTGGCACAGGCAGCACG
AAGCCGCGGAAAGGTAATTGGGAAAGGAAGAATGGAGCCCAAAGGTGGAGAGACACCTA
GGACGGCTTAATAACAGCACTAAAAGAAGCCATACGGAAA

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 638>:

GNMIH05TR gnm_638

TTTCCGTCGAACGTAGCTTCTTTCTTGCATTGCTCAGCTATTAGAGGCCAAATGCATAC
CTCGAGTCCGGGCCCTAGAGGCACAGGTCCGAGTCATCGCTACTGGGGTCTGGTAATGG
GATTTCTTGCTTCGGGCTTCGTCTCCGGGGCCGTACTATAATCGGCGGGGAAAAACAA
10 TTGCGGGCGGGTCCGAGCCGAAATCCTGGTCTGCTTCATGGTCGATAATAATTGCT
TGGTGGCCAACAATATCACAGCTCCTCAAGTAAAAGCCAGCGTCTGCTGGGTCCAAATG
CGGGTCTCTTTGGTCTCTGTAAAGCGGTGGGTAAACGAGTTTGCGGTCGTAAATTCTTGCT
TCGTTAACTTCGTTAGGCGCGAGGCTCCGGTCTGCCAG

- 15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 639>:

GNMIH06TR gnm_639

GGCAAAGTAGCCGCTCTATTCGCCTGCTTCACAAATGCGGCTACTTCGGTCAGCTTCGTG
CAATCAGGCGTTCGAGCCGGGATACTTAGGTTACTATCTTCATTCTCGTGGTCACGTTG
20 CCTCGCGTCGATACCAAAATTACTCGCGTCTCTTCGTCTGCAGCCTCCTGGTGGTCATA
GCATCTCGCCGTCAGCCCCTCGGGGGCA

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 640>:

GNMIH07TR gnm_640

TCCGTTTCTGCGGGTAGCAAACTTTATCTGATCCCGGGTGAGGTGTGTTGCTGAACCG
25 GGGGCTTCGACCGTCCAGATCAAGAGTTTATTGATAGGTTAAAGGGATAGTGTGGTTAAG
GGTCTAAATGGCCGCTTAATGTGGGTATCTTTGCGGGCTTCAAAGGCAGCCGTACGTCC
CTCCAGGTCTTGGGAGTGCTCCTAGTCAGAAGTATCTCCGCTTCAAGGGCCTCGCCTCC
ATCGGGGCGTTAGATCCAAATTGCTCGACCGGGCCCTGCGGGCGACGTCGTCAGCAGG
GGAGTGGGCCAGCTCCTCCGGGCCTCTCGCGGCTTCGAATGCGTCGACCTACCTGGGGGC
30 ATCCATACCGACGCTAAGATGGTCCCGCCAGTGTGGTCATCACTCCACATCAGCTTC
AAGGCCCGGGCGTTTCGCTACTAGCTCGGCGGCTCTTAGCCGCGACGACACCTCGGGCTCC

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 641>:

GNMIH08TR gnm_641

ATCGCACTCCGGGGAGTTAGGATTCTAGTAATTAGGTTAACCAAGGACTACATTCGTACA
35 ATTATAGGAATCTAGGCACAAGGGGTCCAAGTACCTAAAATCTCG

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 642>:

GNMIH12TR gnm_642

AGCCAGCCAGGTCGTAGGTTTCTCTACCTCCCAAGTGACCGTGCGTACGCTCCAAATGGA
GTCCAGAAAATCCGGGTGCCACTAGGAGGTCGATGCCAGGTTTATGGGTCGCC

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 643>:

GNMIH13TR gnm_643

GCTTCGGGATTCTCTTGAGGGACAACCTCCCTCCATAAAATCTTGCTTCTTCGGCTTCCAT
ATACTTGTCCTCAAGATATTCTATGTCGGCTTCTTCCTCTAGGCAAGGGGCTTCATCTCC
GTAAATGTCGCTCTTGCTCTCTTCAATGCAGCTACGTTCTTCGATTCTAACCTCGCCCTC
10 TAAGCCTCCTCAGGTGTCTTGCCCAACAGCACTACCGGAACTTAGGGCGCTTCAACTTC
ATTAACTCAACGCCGTCAACTTCGTAATGTAATGTATTTCCATAAAGTCGCAGGCTAC
CTAATCTTCTTCTTCGTCCTCTCTTAGCCTGCTTCTTAACAACCTTCGCTTAAATCTC
TTTGCTTCTGCTTTCGCGTTCGATTGGTTAGGCTACTTGACAGCAAATTCATCGTCATA
AATGGCTTCAACTTTGCAAATTCGGCAAAGTAAGTACTTCTAAAGTTCTCGG

15

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 644>:

GNMIH14TR gnm_644

CCGGCTACAAAACCCGGGCAATTTCGCTAGTTCTGGTCAGCGTGCGCAGCCGCGGGGTG
GCAGGGGCGGCGCCTAGGAGGCGGCAGGAGTCGTTTGAGCTGCCGTCCCTACGGTAATA
20 AGGGCCTAGTCTCTTGCTTTTAAGGAAGTCCGGGAGCTACAATATCTGCTGCTTCGCCG
GCCAAAAGATAAGTCCCTCCAGAGCGCCAAAGTCAGTACCTAGTGAGGAGGCTCGCCTGG
TACCTCTAGATCCCACACGGCACTAATCTCTGGAACCTCGCCGGGTTTCGGGGCAGCACC
TACCTCTAAGAGGCGTACTACGAGTCCTAATTGCTGCTGCTGGTTGGCTGCTGGGAT
GAGGTTGCTGCCAG

25

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 645>:

GNMIH15TR gnm_645

CGCGGCTCTTAATGCTTCCATAGTCGGGCTTCACCTCGGCGGGGGCGGTATGAACATTAA
ACTTGCTTGCGTAGCGATTCTTCTTCTTCAGGGCCAACCTGGGTACATCCTAGGCCGT
30 CAGTACTTACTTCCTCCTCACGGGCATTCAATTCGTCCCTGCTCCAGACTCTCCTAGAGT
ACCAGCTTCTGCTAATAACCGCTCCTGGGGTGCTCTGCATCATCCCCGGGGGAAACAA
ATGCTTCATAGGCTTAACATCGGACCAGGACCAACGGGATGCGGCTCCAGGCTATATAT
GCTAGTCCAAATAGTGGGTCTTCGTCCATTGCTTTCTCTGTACGGTCTAATCCTCCT
TCTTAAAGTCTTCGAATTTAAACGTCTATAAAAGCTCGGGGAAGCTAAAGATCAT

35

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 646>:

GNMIH16TR gnm_646

GAGGTAGGTAATTCCTCTAATATAGGGTTAGTATCTTGAGGGCACTTGCGTTGAGATT
CAGCTTCTGGTCCCTAAACGTTCAATATCTCGTAAGATTCTTCAGGCCTGTACCAGGGT
40 CCTAAATTTCTACGCTCCAGCCCCCTCGAAATCTTCAAAGTAAACGGGTATCTGCGTT
TGTTATCTGCTTCTTCTTAAACCTTTCTAATGCCAATCTAATATACTCTCCCTAGTAAA
GGACCTGATTCTGCCGAATTCCTCCAGAGCTTCAAACCCGTCATCAGCTTATTCGCTC

TGCGTAAATTTGGGGGTGCTTCTTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 647>:

GNMIH18TR gnm_647

5 AAGATCTTCATCTTTCAATAGTTCTCGGGCTCACTCCTACAGCCTCGGCCATAGGTAAAT
TCAAGTACCTCTCCACGCTCCATGCATTGTTGTCATGCTTCAATATAACAAATTGATTCT
TAGTTCTCTTTCTTAGATTGATGCTACCTCCACC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 648>:

10 **GNMIH23TR gnm_648**

TGATTGCAAAATTTCTGGCTTTAGGGTTGGCAGGCCAAAAAGTCCCTGGGGGTAAGCTCT
CCTTCCGAAAGAGAGTGAAGCTACCGGCTTCTTAAGTGGGAGTGCCTTCTCGAGTTTAA
GGCTGCGCTTCATGACACGGGCTTTTCAAGATTAGGGCCTCCAGGCGTTGCAAATAGCGT
15 TGATAGTACTTTTAAACAGAACTGCAGCCTTGCCGGGAAAGGCTTACTGTAAAGTGGCT
CTTAAGATTAGTTTTCTGTCTACATAAATGTAGGGTATTCGTCAACTTATCGATCCGCG
CCGCGTTCTTCAGACTTACGGGCGTGGCTCAGCGGACTCCCCGGGGCGGTTAGGCGCTAG
CAATCCAGCGCGTAGACCTAAAGACTGCGGGATTGAGGGCAAAACACGAGGGATAGTAC
TTCAGCTTCGTTAAAGGGGTAGATCGCATCGCTTGGTCTTAACTGGTGGTACTCTCTCT
ACA

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 649>:

GNMIH25TR gnm_649

TACCAGGAGGGTAATAGTACTGGAACCCAGCATAAGCCCATAGAGGGAGGTCCAAACTT
CGCAGGGTTCTTGGGTACATCCTGCCCATCCTAAGCATGCATAATTGAAGATACAGACTA
25 ATCTTCAGAGGCATGCGGAGTCTCGGGGGCGGCTTCTGGATCCTAGTAGCACCAGATA
CAAAATCTTAAAACTCTCTGCAGTAGCCTTCAATCGAATAAGCTTCTTTGGTAACAACT
TAGAATTAGACGAAATCCCTGCCTAAAAATACATCCAGCTAGATGTCTTATTGAGATAGT
CCAGATTTCCATAACAACAACATTGCGAACTTAGATGCATACGGGGAAATTACTCT

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 650>:

GNMIH26TR gnm_650

AAGGAGTGGTGGTACTTGCCGGGATGTGAGGAGGTTAAGCACGAAGAAGTCTTCCAGGGG
TGTTGGGGGGAAGAGACGAAAAGGTAGCAAAAGAGCCAGGGGTACCAAGAGCGTGGGGAG
TGGTAGAACTTGTGAGGTACCAGACCTACAGCCTAGGGGGGGAATTTTGAACGAACCTA
35 AGTGGGTGTTTAGACGTGCTGGAAATGATATCTAGTGGGGTCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 651>:

GNMIH27TR gnm_651

TTTCTTCCGGGCTCTCCTCCTGACTAAAGTAGCATTCTCAGCTGGGCCCAAGCCTCCT

5 CCTGGCCAGCCCTCGTCCCGGGGTCGAATTGGCTCTCCGTACGCTCCAAATCACGGTTTCG
ATTTAAATTGAAACACCAAAAGCCAGGATGTAGAAGGCGACGTGGGTGGGTACATTGGAG
CGTCGTGCAAATCCCAAATTCAGACCATCCCCAAAGAGACGCCAGGAATAAAAAGTACCA
TAACCTCCTCACTTCTACATACGATACAGACGATCCAATTCAGGTATGGCCGCTGGTACT
ATTGGACACAAGTCGGTGTGGGCACTGAACCTCACCTAATCTTCGATGCCGGGGGCGGAA
GTTATGAGAAATGCTTTCTTGCGCACGCCTCCACTACCCAAGTGCGCGCTCCAGGAGCTT
AGAAAATCCGCGTTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 652>:

10 GNMIH28TR gnm_652

15 AAATCTATAGGTAACTTATACAAAGGCTCCGGAAGTAAGTTCTAGTAGGTGTGGTTCC
TACAAACGAGTTTCATAGTATTCTTAATAGTATTCTAATACATAATCTTAAACGAAAGGGC
CCGGATAAAAAATCCTCAGCACCGGGCTCGCTCTGTCCATGAGATTCCGGATCGGATTGCT
AATATACCTAATGGAGTTCAGAACCTGGGAAATACTGGGCCACTCATATACAGGAATCCT
AAGCGCAAGTGCAATTACAAGCTCCTAGGCCGTGGCCCTAAACTGCTAGGAGCCCCCTAA
AGGTAACCCTAACCAATACTTCGCGTACTTGAAATTAATAGACTAAAGCCTAGGGCAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 653>:

GNMIH29TR gnm_653

20 CCCGCGGCGATCTGGGGTTCAACTCGGTACTTATCAACCTCCTGGCCGTCTAATTTTCG
TTCTCTTCAGAGGACTAATTGCTTTCGCTTCAATCTGGTTAACCTCGCAACCTTC
GTGACAAAAGGGGCGCCGTCTCCTACGGGCCCTCTCCATCGGGGCAATAAAATTCGAT
TCTACCTAGGCCTGGGCTGCTTTCATAAGCTCTCGGTCTACAGCGATTATTAAGTCCCAT
CCCCTAACTGCCCTACTGGCTACCTCCAGGATCATCTCTGCCCTCGCAAACCTCAAGCTC
25 GCCAAGGGAGGATTCATAGCCGCTTCTTGATTCTCAGCTTCAGGGCCGAGGGCTTCGC
TTCTCTCTGCATCAGGCTTCACGGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 654>:

GNMIH32TR gnm_654

30 GTCGTGCGAAATCCCTGAATCCTGCTTTACTCCTACGTTACAGCGTTCAAAGTACTTGCGT
CCCTACCATCGTCTCCTCAACTCCTAACTGCTCTCCATCCTTGGGCTGCTTTCAGAT
CTTCCGAGTTCATCCTGTCAGCACCGGGGCTGCTGCAAGTGCCCTCCAACGGGGCTGG
CGCTACTAAGTGCTTCTGCAGCCTGGTTCATCTGCGGGGCTACGGCTACTACTCGCAAGGT
CCCTCCTAGTACGGTAAAAAGTATCCCCTCCGAGGGCAGGGGCTCTCTACCTCACATAC
35 CCTCCGTCTTACGATCTCCTCCGCCGTGCGCTCTAGCCCTGCTTTTCGAACTCTCAACGT
CAACGGGCTTGCTCCTGCTCCTGCTTCTGAGTACCTTCTGGGTAGATACTAGGGTAGA
CTCGGCTAAAATCGAGGTGGTTCATTACGGGGTTCCGGTCATTTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 655>:

40 GNMIH35TR gnm_655

GATTTAGCTCTTCGTTTTCTGTACCAAAGGTCACGAGTAATGCCGTCAAGGGTACTCT
ATCCTCCAGGTCTAGGGCAACGCTAATGGGTTTGAATACAAAACCTTACGAGCTCCGAC
TAGATCCTTGGGTGCTAACAAACAGGCTTAGCACTTATATCTAATGCATTTAACCTCAA

TCAGATTATAGTTAAGATTGCGTTTCTTATGCTATTCGTATTCAAAGTCTTAAATACTGG
AATTCTTATAAACTATTAGTACTTCTCAAAGTACATCCTATTCTATTTAACCCCTACTAA
GATACTCTTCAAAAACCTTACTCCTAAACTTACATGAGTAAATACTCGAACTCATAATT
GAGAACTGTCAGGTCTACTGCAGTACTATAGTCATTTTGG

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 656>:

gnm_656

10 TAGGGCGAGTTCTCGGGAGTCCAGGGTGCAGGGGGTATGAGAAGACTTCCGGGCTTCGGC
TACCTCCGGGGAGCCCAAACCTCCAGCAGCCGATCCTCGGGCAGAAGTCTAGTACTCCC
CTCACTCCGGGTTAAGATCCTCGCAACCTGGGCCAATGGGGCTCTCTAACAGCGTCAA
ATCTATTGGCGCGAGTCAAACCGCTCCACAGCCTCTCTCTGGTCCAAATCCTGGAGCTC
ACACATCACCGAGAGCTTGGCCTCCATGGTCGCTAGTTCAGTCTTAAGAGTCCCTCGCT
AGGCTTACTCCGATCGGGAAAATCCAGCCCAGCTGCCGTCTTTTGGCGTCAGTCCATC
15 TGGCTTGTCGTCTCTATCCTGGTCCTCATAAGTGCTGCATCTCGCTCCTCCAGCGCCGG
GGCAACCAAACCTCCTCTGCCGTGCAGCCGCTCTCAAATCTTCTGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 657>:

GNMIH38TR gnm_657

20 ATTTCTGCGAATATTCGTACTGTTCTTAAATCTTGGAGTCCCTCCATCTGGCTTCAGTGC
TAGTAAAAGATCTATGATTGCTTGGATTCCGGTCCTCATAAGTAATCTCGGAGTCAATGC
TAGATCTCCTACCCCGCAAATCTTGGCTCAACGCGTCTCCAAAGTTGTAAAATTTGG
AAAGTCTCTCTTCAACAAATTGGCCCTCCTCAGGGCCGTCCTCGCCACAGGATTGTTTT
CTTGAGGGTCATCAGCTTTAATCTTACCTTATTAAACAGCTTCTCTCGTGCCTCCCGGGC
25 AATCGAGGCTCTTGCTGTAATCAATTTATTCTTCTTAAGTCTTGATCCCTGCCATAAT
CTTGTCCAACCTATCGGGCGTCGCGATCATGGAACCCCTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 658>:

GNMIH42TR gnm_658

30 TGCTTGGGCAGGGCTGTTCTTATGGCCCTGGGCTTCGTAAAACTCGCGCCCGCGCCGTCG
TCAGGGCGGGCGTTAAGGTCGTAAGTACTTCCGTAAAAGCCCTAAGTACGGCGGGCATCT
GGTTCATGGCTCGGGTAGCAATTGAAGCTACATCCGGGGGTGTCCTACGTTCTAGAGTTA
TTACGGCCGGCTCCTCCGAATTAGACTGGTTAATATGGTGGTTATGGTCCGCCCTCAGC
GCCGACCCTAGCCGGGCTGAATTGGTGGGTGCACGTAGTAGTGCGCTCAA

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 659>:

gnm_659

40 AAAAAATGCGGTAATGGTGGTGGTGCCATGGTGGCCGTGCTGGTCATTAATTCGTTGCATC
ACAAGGGGATGGATATTAATAATGCCATTCTGATCAATTGGGCAGTAATAATCGATTACA
TTATGACAAAATGAGAGCGCCGTAGGTATTACTCGGCGGTGGTCTGCAGCCCTAGTCCG
GGCTGCAGCGCCCCGAGGTTGGTTGCATTAAATATCACCAACGCCAACGCTTCGTGCAA
CATTTCAGGGTTAAAAGTTAATGCATTTTGGTCTAAAACTAGGCCCTAAAGATCGTGGT
TGCAATCCGTCTTTGCGGGCGCCGATAACGAGGCTGCCCTCCATGCATTCTCTATGATATT
CGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 660>:

GNMIH46TR gnm_660

5 TGGGTTCCCCAAGGCTTCACTGCTGGCTTGAGAGCTACAATCAATGCTGCAGCTAGAGCA
GCAAACACCAAACCAGCTGCGGGTTCAGCAGGAAGTACCCGCGTCCATCTCCGCTCCTCA
GCTTTAGTCTCGCAGCAGCTATCAATATCAACAATATCATTTCTTTAGTCTATCCTGTA
AACACTGCATTATAAGGGTTAATTCTTACAACCCCTGGCTCCAAGTCCATCTCCTGGG
ATCTCTGCCTCAAACAAGCCGCCACCAGGGCAATCATTATAGGTAGGGCCAAATCAGAG
10 GGGCGGGCTTTCTCGATGTCAGGTGGAACCCAGACCAGTCCAGAGGGTTAGCTTCGTGC
AAAGATCCGGGGTTCGGGTACATCCTAGGGTTCGCGGGTACTTTACTAAGGTCCCTCCAA
GCTCCTAGATCCCAAGTCCCGGCAGGGGCGCTGCTAGCCTCTCCGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 661>:

gnm_661

15 CAGGAAACGCACTTGCTAATAAAAAATCTCAACAACCTCCATCACGGAGATCAAAGTAACAA
CAAAAAATGCATTTAACCTCATCAAGGCTAATTTCTCGATAAAAAAGCCGCAACGGGG
GAGTCTTAGTAAATCTTCGTGCTAAGTTCCTCATAAAAGCCTCCCTTCTTATCCGAATAA
ACCTCGCCGAGTCTCTAGGTGCTTACGCCAACATAGCTTGGATAGCCTCCATCTTCGTT
20 CCGACATAGTCGATGCAATTTAGGCCCTCGATTGGTTTCGAGCAATAGTCCGTACAGGGG
CCAACGGTATGGCCCGGCCCTACTAAAACCGAGTCTCACTCGAGTCATTTCGAGCTGCAA
ACACTAATCTAACTACCTCACGGCTCTCACGGTGGCAATACATGTGATAATCCTACTCC
GAACAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 662>:

gnm_662

25 GCGTCACCTTAGGCCGAGTTACGGTCCTAACCGACCTGGGAATTGGCTCACTACCTGTG
GCGTCGCTCCATCCGGGGTCGTCACCTTACAATATCTACCTCGCGGCTGTACATCCCTCT
CCGGCATCTTAACGGCGATTTACGTGGGAATTCCACTCGTGGGCGGGCCTATAGATCTT
ACAGCGTCTTCTGGTAATCGTCGCTGCTAGGACCATGGGGTTGCTTCTAGTAAGCATGG
30 CCATGGCCTTCGTCCTGGTCAGGGTAAACCGGGCGGCGCTCACTTCGAGGTGGTTCTTC
TGGCTCTTAGTACGTTTCATCGGCCCTATACGATTTAGCCGGCGTCCCGTAAAGCTCTTCG
CGGTCTCCTACAACGTACGCCGGCTGGCCGAAATCTTCTAGACTGCTGCGTCCCAAGTA
TCCTGGGCGCGCTGGCTCTGGGCTTCGGGGGCG

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 663>:

GNMIH50TR gnm_663

40 GCAAAAATTGGTAATAAACTCCTCCAAATAGAGGGGCCCCAGCTTCTGGATTTTTTGCGC
CCCTACTACTTCCTATCCGGCCTATCCTCGGGTCTCTACTACGTTTGCTGGCTTCAACG
CGGGCTTCTTAGTCCTCTCCTCCTACCGATCCATAAATTCGTTAGCGCAAAGAGCTTCT
CTTCCATCAGCTTAAAAGTTGCTGCCCTAACCTAATTCGTTGCTTTCAACATAATCCTAA
TCTTCGCGGAAGCCGAGGCATCATAGTATTCGGGGCAGATATCTCTAAAAACAATCTCT
CGCCCTCAACGCCCTCAACTCCTGCCTATATCAAAGTTCTAAGTTCTGTATCTTTAGTTA
CTGGGTTCTTCAATCCTGCCTCGCCAAAGGCCCTCCCACTGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 664>:

GNMIH51TR gnm_664

5 GTTCTAAATTATTGTTAATTGTATAAATTGGGAAAAGTTCTGAGAAGTCTTTCTAAGGG
CAGGGAAGTAGGTGGATGGCAAAGCCTATAAAAAAGTTAAGTTCGTAAACCTAGCAATCA
TTGGTGCTTGGCTAACTAAAAACAGGGTAAATGCATCCTGCTCGGGGCCTACCTCGGGCA
ACAGATCCGTCCCTTCTGCCATATCTCTGGATCCGGAGTACTAAAGTTCGATCTTCAGGCG
TCACTAAATTCGGGCGGGCGTTCTGTTAGTCCTCACCAAATTCAGCGCCGTCTTAACCA
AAGCGATATTGGTGTTTCAAGTAAATCAGGTGGGCACGGGCACTGGCTCGTTGCAACCGAT
10 CCTGGTTGCTTGTCTCGCTCCGCCGTCAATATAATTGGTGCGATAAGACTTTCTAAAAGT
CGCCGAGAGCCCTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 665>:

GNMIH52TR gnm_665

15 AATGTGGCTGAGGCTAGCTGCTAGGCTATACGGGCAGGGCATACTGGCGACAAAGTAAGG
TTCAGGAGGATTAATAAGTCAGGCACAAAAGAAAAGAGGGATTGCAACTGACAAGTAC
GGGGCCCTAGTTACCGGAGGCGAGGAGGCAAGAATGGAAAAAGAGACACAAGGAATTAG
CTAAGGTGTTGATGTAGCTGCAAAATTTAACTTCAGATTCAATGGGTTGTTTCAAGACTG
CCAATAGTGCGGAATCAGCGTTCTTGGCCAACGCCAACACCTGCAATGCTTCTTTGCT
20 CGGACTCCCTCGCCGAGGCTTCAACGCAAAGTTCGGCAAAAATAGTTCCAGCTACATT
GGGCAATCGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 666>:

GNMIH53TR gnm_666

25 GCTTTGTTGTGCAACTTCATTATGCTATTTAGTACTGCTGGCTTTCAGATAGAGGCGCTA
TGGGTCTTACAGATCTCCTTAGACGTTCTATTACAGACAATGCAGCCGGTCCAGCAAAA
GATTAACGGAAACGAGGTGCTTACGACAAATTGTCTGTGTTCAAAACATGTGCTGTTTTA
GTAAAGTTCTCAATCCGCGACTCCTGCTTCAGGCATAAGGGAGTGGCCCTAATTAATCCT
CGGGGCGGTTAGGCACTGGCAAGCCTCCGGCTCGACAAAATGCTGCGGGCTTGAAAAGA
30 AAGCCCCCTCCTGCTCGTTAAATGCCTACGAAGCAGGGGTAGATCACAGCGATTGCCAACA
AGAGTCTTCTTCGGGGTGGATCCGCTACCTAGATGGGCCTCTAGCTTCCGTTTCTCGGGC
GAACATAATGGCTTCGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 667>:

GNMIH54TR gnm_667

35 GTCCGATTTTCGCGAGTCCGGTTCGATGAGTGCGATGCGTGCTCCTGGTCGTCTTGGCGTT
GCAGGGGGCGGAAGTTATGAGATGATTGGTATAGGGTGGAAGAAAGGGGAGCACGAATTA
GATGGTGGCCGTCGTTAAAGTCCGGGTCGTTGGCTGCTCCTACCGGTCCTTAGTCCGGG
CCCTCTCAGGGCCAAAGGGTTGGAGATCCTACCTATTAATCCTCCTCCTCCGCGGGGGTTG
40 CTGCGGGGCGAGAGGGATGAGTGCCGCTTTTGATTTCGGTACTGGCTTCAAGGGGAGAG
TCCCTCTATCCCTCCGAAAAGCTTCGTACAGTTGGTACCCGGTGCTCGTTCCCTATCTA
AGCCTGGGCCCCGTCCCTCGAGCCCTCGGCTTCTTGTGGGAGGGGCTGCGTCGGGGATAC
TCGCCGTCCTCCAGCCCGAGGAAAGGAGCGTCGTTATACGGGGATCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 668>:

GNMIH55TR gnm_668

5 AGGGCAAGGGTTTGACGGAGTGACCATACTTTTGAGGTGGGAATGAAGGGTGAAGTGGCA
AAGGAGCACATTAGAGCTGATGATTAGGGAGTAATGGGGAGGGCGGAGGCCACGCG
GGGGATGAGCATTGTAGCGCAATTGCGGAAGCAATAAATTACGGGTATAAGTTTCACTT
AAGCATACCAGGGCAATAGATCCGGATAGGGCAGGGGTACCCTATTAAGCCGGAGTTT
TGAGCCTGAGTGGCTATCCGAGATCTAACATAAGCTTATAAAGCCTGGGTTCATATCTT
ACCTACCAGCTGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 669>:

GNMIH56TR gnm_669

15 TTTTGTGTTTGCGCCCGACACCTCCTAAATTCTACCGGGCTGGCCCTCCTAGGGGTAATC
GCTACCTGCTGGGGTCAGGGGGGCTACTGGTCCGGGGACTGGTCTACAAATGTGCTGGGT
GGTCAAACTGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 670>:

GNMIH58TR gnm_670

20 AAACTTTGGCGAAATCTTGCGGGGCATTGGTCGTATCCTAATCCAGTCATCAGAGCTC
TTATCAAAAACCGGTGCTTCGTAGTGGTTATCGGCAGGGTAAGGCTTCGGTTTCTACTCG
GGCACTTCGCTAGTGTCTCTTTTCTCTTAAATGGTAGAGAAGTCCCAAGTCTTCTGGTA
GACTGCATCTTCTCAGCATGGTCTTCGTTCAAGTCAGGGTTGTCTGGCAACTCGAATTTT
AAATTGGCATTTCGCTCGTTCGTTGCTCGTGTAGTGGCCTCAGGGTGCTCGAGAATGGGC
GTAGCCCGGGATGTTGCTTGCAGAAAGCCTAGCTGCAAGGGAACTTTGGGGGTAACCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 671>:

GNMIH59TR gnm_671

30 CGCGTCGTGCAACACCTCCGTCGGGCCTCCGTAGGCTGGGTTAGGTCGGCCAACAGTCT
AGGCGCAACTACGGGCGTAAAAAGAGGTCTAATATCTCTTTGCTTCTCTGCCCTCCTC
CGTACCCAACCTCCAGGGCTTTCACTGCTTTTGCAAAAGTCGCCCTACCCTAGGAACTTC
CCGCACCTCAAAGGCTTCTTAAGTTACCCCTCACAACGCTCCGGGGCTCGGCCTCCAC
TCCATGCTTCCGTTTCAATTCCAATAAGTATACAAAAATCGTGCAAGCCTAAGCAATA
AAGGCAAGGGTTGGTGTGCTGGCTCCGCGCTCGGGTCTGGGGGTTCGGCGCAGCTACT
AAAATTACGATACCTGTAAGGTATACTGGGCCAGAACCTCAAAAAATACCAAAGTCTTG
35 G

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 672>:

GNMIH60TR gnm_672

40 TGCGAGGCGTCTTCGGGCTTCGCTTGGGCCTACTCCGCGGTCCCTGCTGCCGTCCAACGG
GTGGAAAGCGTCGTAGGGATTCTCGCTTCCGTAGCAGCCAATCTCCTGCCATCCGAGGGC

TTAAACAAGAGGGAAATTGCTTCTGCATTCAACACCAAACCTTCGATTGGTAATTGCAGCA
AATTCCAGGTTGCTGCGTTTAAAGCTTCTCGCTTCAGATCTCTCGCTACAATAGTTTCA
GGCGTACTGATTGCTGTTGCTCTCTAAAGCTCTGGTTGCTTAAATTAAAAGTACTAGAT
CGGAGTTTGGAAAGTCACAGCTGCATTCTCGAGGCGGTCCCTGCCGTCTGCCTAAGATC
5 CTGCCGTGGCCAGGATCTGCCCTCCAGGCCGATGCATTCTCGGGTGCAGGGTTGCATTG
GGAGTCAGCTCCATATTTAAGATTGCTTTCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 673>:

GNMLH62TR gnm_673

10 CCTTAAAGTCTTCCGATAAGCTCCTACTGGTCTCTAAAGTCTCTACATCCTTAAGCTTTC
TAACAGGCCCTCCTGGGGCTTGCAGTCTACGCACGGTTATGGGCGTGGGCAACTCCTGCG
CTACAGGCGCTCTGCTGAAAACGAAAGTTTTTAGGGGGCTCCGGCGATTCTGCGGGGCC
GAGACTGCTTGGCTGCACTTAAACGCGGATTCCGATTACAGGGGGAGGGATAGTGGGAG
ACCTCACAGTTAAACAGGCCAGATTTAAGGTGGTAACCCGATCTAAGGTAGGACTGGCCC
15 AAAGCTTCGTTGCAGGCACAGTTGCTTAGATATCTACCCGGGCCAAGCTCCTCGTGCTTC
TCGGCAGCAGCGGCGTCTTCGGGCAAGTTAAGGTCCTTAAACTTCTCGACTTCGCGGGCC
TAAACAATTGTGCTTAGGGCCGCGGCTCTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 674>:

GNMIH63TR gnm_674

TATTTAGAACCCGAGAGCGGGCCAAAAAGCAGGTGAAAATGGGACCTCGCTTCATACGAA
ACGTGGGCAGGGTACAACGTACAGAGACTCCGAAGGCGCTTAGGCCCGAATCTGTGTGGG
ACGCAAGGGGAGAGGAAGGGGCAGAGGTAGACGGTATGAAAAAGTTATTAATTATGACT
TAGAAAGAACGACGAGGTTGAAAATAAATCCGGGGAAGTTGCTTGGGGGCAGGCTCTGG
25 CTGGCTCGTCGGAACCTAACTCTACTTAGGCAGCAAAGGAAGAACAACAGTCAGGGTA
ATCAAGAAGGTATCACGGTGGGGCCGAAGAAAGTAAACAAGGAAAAAGCCTAATATTA
AGAAAAACGATACTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 675>:

GNMIH64TR gnm_675

AAGATCATAGTTCTTTAGAACAGGTCCGAGTCAAATTTCTTCTAAGGGCCAGCAAAGTAA
ACGGCTTAAGATGTACCAAGTGGGCGGCAAAAGCAAGCACCGCTGCCAACCACACAACC
CCTGCTCTCTCAGAGTCGAGGCTGTAATATTCATCTTCTTTGCGAGCTTCCAAAGCGTCT
GCTGGTCTGGGTACATCCTAGAGTGCTTCTATCCCACTTAGTCAGGTACCTACCCTTAA
35 AGTCAAAAAACACCACGGGCGTCCGGGGTAATTATAATAAACAGCTTAGGGGTGGCCAAA
CAGCCACTGGCCCCGAGCTTCTTAGCAGGAGCCAATGGGGCGCTAAAATAGAACTATGG
TATCAACACA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 676>:

GNMIH65TR gnm_676

GCCTCTTAGATTCTTGCTACCGTGCTTCGTTATCCATCTTTCTTAAGAAGAGCCACATT
AAAGTCAGCGCGTTACGGGTGGGGATCGCTCCAGAGTTCGTCTGGGCTGGTACGTGTG
AGAATCCTTGTAAGTCGTCAAACAACCTGGTAAGCGTGGGATTCTTGTTTCGTGGTACCTCTG

5 GTTGTTCTAGAGATCTTCGAGACGGGGCGAAGGGGTCGAGACTTCGCGGTGGGGTGC
TTAGATACGGTCCCAAACAGAGCTGCTTCATCCAGGTCTTGCGCGTCATCAGATTGATT
GTGATTTTCTCGTTGCCGAGACTTGCTGGTAAGGCTACCGGGCACCGGCAGTAAAGGTGGC
GAGCTCGTAGGGCCCGGCCAAACGTGTTCCGAGCTACAGGTCCCCCCCCCTAGGCAGG
GGCCTAGTTTGCCTGCGAATTCTAATCGTAGTTTCATTCTATACACTAGCTGGTGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 677>:

GNMIH66TR gnm_677

10 GGGGATATATGTAGCAAGGTAGTAAAGCCAAGTGCGCAGCCGTGAAGAGTGAGTTTAGTA
AGAAATAAAGAGCAGGAGTGGGGACTGGGAATGCACAGAACTAGTGGGAAAGGGGTGG
GTAAGAAAATTGAAAGGGCTGGCCAAGGGATGGGTGCGAAAACGGAGGGCGGCCAGGTT
GTGGTATTGACGGGAATAAAGGGGTAAAAAGTAGGGTTCTACTGGTGGGGCAAGGGGTG
AGGAAACGGAGGCTGGCGATAAGGGTTCAGTAAACTCTTAGAAGAAGAGGTAGGGAGA
15 CTTGTAGTGAACCTGGGAAAGGGAGGAAAGAGGCAACAGAAGAGGTTCGGGGTGGGATAG
GGCAGGGCAGGGCAGAGTAATACAGAGAAAAGCATGGGTAAAGATGGCGAAAAGTGCAA
ATACGGAACGCGTGGCTGGGTGGGACT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 678>:

GNMIH67TR gnm_678

20 AAATCTGAGTCTCAATAAAGTCAATAGGTACATTGGTTGCTTGTCTACCTGAGCGTGGGT
GGAAAACAATGTCAACTCCCCTGGAAGCCGGAGATTGAGGGCCAACATCAAGACATCTAG
TAACCTAGTCCAGAGCGTCGTGCAACTTTCAGGGGTGGATGTAAATATTAAGTAGTATCA
TTCAGGCAAATTAAGGATAACCAAGTAGGATCAGCTAAGATACTATATGCCTACCATAAA
25 TTCATAATGTTTGTGGGTAAAGAAGGGTCCCGGGGCTCTTGCTTCTGGAAGGGGAGCT
TCGAGCAAACGTAGCTTCAGGCCCGGAGGATTCTCGCTTGGAGCAGAGCCTCCGGGTAC
CCTCGGTTCTCTCTCGGGTCCGTTGCAACTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 679>:

GNMIH72TR gnm_679

30 GAATCGAGGACTACCGAACTTTTGTGGTTTTTCGTTCTACTCATTTCAGTCACTTCAGG
CGCTGGTTGCTTCTCATTAGAGAATTTGGCTTCATCCAAAGGGTCTGTAAATTCCTAGAC
AGCTGCAGCGACGGTGTCTTCACAGTCATTATGATTATGGGCTTCGACTTCGTTAATGTC
GTTCTAGACTGGATTCCGGTTTCTCTAAGCTGGGTAATTCCGGCTCCGCTACGCCAAGAC
AATATCTTGGGTAAAGAGTCTTCTTCTGTTCGGGTGCTTCAAACGTTCCGTCCTATA
35 TTCGTAATCCGGGGGGTAAATCGCTGGCTAGCTCCTGCAAATTCGTCCTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 680>:

GNMIH73TR gnm_680

40 ATTCCGGGCTTCTTCAGGGGATTTCAGGGTGTGGTGGGGGGCCGCCAAGATGCGTTCTGC
CGACCTGGTCCCTGCCAGCAAAATTCCTTCTGTAACCTTAACTCCAACTACTTCTTCAA
CTAGCCGGGGCAAGAGTGGGAGCTTACAGGGTCTGGCGGGGTACTACCGGGGGGCAGGGC
GTCCTAGTGCAAATAACTCCTCTTCATTAAGTTCGGGGGCTTCGGGATCTCAAGTTCA
GACTTCGTGTTGTTGCTAAACAGATTCTGGGCTGTCCGGCATCCAGCTAGAAGTTCCTGC

TGGGGTCACTCCGGAGACTGCTTATTCATATGAACTTCGACTTGATTCTGAATGGCnCTC
CAAATAGGGGTTGCGGGCTTGGGAAATATC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 681>:

5 GNMIH74TR gnm_681

CTCTTTCCGATTGCCTTCAGTCCGAGCCCTAAAAATGGTAACCCCTCGCGATTATAGTTGC
AATCAGCAAAGGGAGTGTGGGCAACTGCCTCCTCAATCTTGCTTCTATCACGGTCATAGT
AGTAAACCTAGTCAGAAGTTGCAAGGCCAATAATCTGGGTTCCGGCCAAAGTTACTACGGC
TCTCATCAAAGTCAAGGCCGCTACCTCCTGGTTAATCACGGGAAGTGTCAAGGTTGT
10 CTTCCTCAATGTATCTTTGAGGTGGTCTGTGCTCAGGAATAATGGTCCGAGGTACCAA
AGTTGTAAGGTAGGCAGGCATGCCCTCTTCTCTTCAAATCTCTCATCTCATTGATCG
AGCCGTCACCTCCATCACTTCAACGGGGTTCAGGGAGTGGTAAAAGTTAACTTAAGAGC
CATTCAA

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 682>:

GNMIH77TR gnm_682

GTCTCCTCATAGTCAGCTTCGCCGAATCCCTCGACCGGGTTCAGTCGAGGTTGGTATGG
GCAAAAGTCGCAATCTCTGCCGAAGTATTACTAATCTTCTATTATAGAAAATCTTATCA
TTATCCGTGCTCCTATAATCTTGGGTGCTCCTCCGCGGTCTTAAATTCAGAGATCTAAATA
20 TAAATCCTACAAGTCTTCTTATCATTCTCTTCGAGGGCTGAACAAATGGGCAAGTTTCG
ACCTCGACTTGGGTGCTGTTGTCCGCATTAGCGTCTTCATTAGTAGTGGAAATCCTGCTA
GTCTTAGAGGGCATCATATCGTGAATACTCTAAGTAGTACTCTCTTCAATCATAACTTC
TTACTCATCTAGACTTCAAATTCAACTGCTTTCACGGTCTAGTAAAAGTAGTATAAGAA
TTCTAAGTACTCGCT

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 683>:

GNMIH78TR gnm_683

GTCCGATTATCATTCTTCCCGAGCAACTTCTTTGGAGGTTTTCGTGAGTCCAATATCT
AATTGCTCCTAGGGTTCATTAGGTACCAATGTGGAGCCAGGGGAAAACATGTATCCTCG
30 GGGGTCTTAGTCTCTGCCGCAGGAGCAGTCTGCCACAAAACAGCGGTTTTATGTTCAAC
TTTCGTTTTCTCTTTTAATACCTACTATAATAATACCTTCGAATTCGGTTCCTCAACTT
CTCTGTCTCTTTCTAATCTTCAGGATTCGAATCATTATATCCGGTAACTTCGTAGGCAG
CAAAAACTCCTCATTGCTCTTCTGCAATTTGCTGTAAAGATAAACTAATTCCTCATCAA
AAGAAATTCGGTAGTTGCGGGCCTCATCTAAACAAGATATTGATCGTCTTTAAGTTCAA
35 TGGGGCCATCTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 684>:

GNMIH80TR gnm_684

AATTGTCACAGGTGACAGGTTTATGGGTGCGCCAAGCATCCGGTACGGCTAGGTTCATAA
40 TATTCTAAGTGGCAAATTTTGTCTTCGGAGAAACATAAAGTCTCCTATAAAAACTTCG
TGCAAAGCTGCGGTCTCCGGGTACATCCTAGGGCTGTAATGGGAGTACCTCGAAGCCT
CTCGGGTCTTGGTGTCTTCATAGGTGTGCTATACTCGGGTACATCCGGGTAGACTTGC
TAATCTCTTTATAGTCTCCCGCGACGCTTACTACTCGGTCTAGGGGGTATTAGTATGCC

TGGGACTCCTAATCCTAACGGTCTGCTTGATGGGTATGGTGCTGGGACATATTACTAAAC
TAAACTCTAAGGTGGTCTTTAACTAGGTACAGACTTCCTTAGGGTGGTTCCTCTCCGAA
GGGTCTGGTCTGGCTAACCATCAATTCATCCGGGGCGTCTCTCTAAACCTGTCAGCC
TCCTCCGGATTCTGGTCTCCCTGGTCTCC

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 685>:

GNMIH83TR gnm_685

10 AATCCGTACTCGTCGTCTCTAACTTCGTTCTCTTTATCGTCCCCTGCGGCTATATGGT
CATTCTTGTTCTATAAAGTAGTGTTCCTCAGATTGGCTCTTAAAACTTCGTAATGGCCC
TCATCTGGGACATCCTCGATTCCCTAGTTATCTGGTCTAAGATCCTCCTCCTCTCGTGCT
GTTTCGTAGGTCTCCGTAAATACCTACCTCCAGGAAACGCGGCAATTAGTATCCTCAAAT
ACCTCAGAGCCTCCAGGGGGTCTTTCAGTATCTTAGGAGCCGACAGATTCTTGGCGTCTA
ATACCGTCAAAGTTGCTCTCCCTTCCGGATCTGTGGCGATACTGTCCCTAAGCGCCTCCC
15 CTGCCGTCAGCGGCTTCAGCCTAAAAGTTTTCAAAAAGCTTGCAAATCCTCGAGTCCCTC
AATGTCCAGGCTCGGGCACTACTCCTAAGTGCCAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 686>:

GNMIH84TR gnm_686

20 GTCCGATTTCTCCATGGCTGGGGTCTGGGCCTGAACGAGCGTGTGCGGGGAAACGCAGG
AGGCAGAGGTGCTAGAGGTTCAATCCATAGTAAGCTAGTATTGGCGATGGTTAAATTCCT
ATGCTTAGGAATAAACCGAGTCCTTAGCTTGCTTCTAGCAGCGGCGGTAGTTACGTCAGG
ATTGATCCTAAAAAGATTGGTCTGCCAGACGACCCTATTGGTGGCCGGAGCAAGTGTGGG
TCTGTTAAGAGTTAAATCGGGTGGCTACTGAGGCTTTTTCTGGGCCGATGCTTGGTTTCG
TCGGGTGGTTTCCGGAACACGAGGGCTCTCGTTACCCTAAGAGCCGGCTTAGACAGGGG
25 CTGCGTTTTCCGCGCCGTAACCGGGCATTGCTATTACGCGCCCGTAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 687>:

GNMIH85TR gnm_687

30 GTCGTACTGGATCTACTATTTACCCTTGCTAGAGTTCCATGCCGAGCAAAAGCATGAG
CAACAAAGTTTTGGCCAGCTCGGCCAACAGCAAAAGCGAGTGCAAGTACGGCATATAGTA
CATAAATACTTGTAACATAAGATCCAATGGTAGCAAAAAGAGCAAAAGCAGGAGCAACAA
AGTTTTGGCCAGCTCGGCCAACAGCAACAGCGAGTTCAAGTCCGGCATATAGTACATAAA
TACTTGTAACATAAGATCCAATGGTAGCAAAAACGGCACATACGCACGGGCTAATTAACA
CTTCTCTACTTCTCACTTTAATTCTTATGTACTGCTAACTTTAATTCTTCTCTAACT

35

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 688>:

GNMIH86TR gnm_688

40 TCATCAATTCTACATCGATAAAGACGATCCAATTCAGGTATGGCCGCTGGTACTATTGGA
CACAAGTCGGTGTGGGCACTGAACCTCACTTAATCTTCGATGCCGGGGCGGAAGTTATG
AGATGGGTTCCATGGGTTCTAACTTTGCTTGCTTCTGCAAAGAGTGGTCTCCAGGCG
CTGTTCTTAGAGTCTCGGATTCGGCCTCCCCTCCGGGCAGCAACATCCTATAAAGCTTCG
GGCAACCATCGGTACATCCTAGGGCGCTGCAGGTCTAGTAACAGGGAGGCGGGCCTGCTT
GTCAGGGCCAGCGTCAGCTCCATCTGGGGCCGTAGATTAAATCGGAATCACCGACGTTAGC

TTT TAGGGCCGCTCCGTCAGCCGCCGCTGCAACGTCTTCTTATAAATGGTCCGGGGTGTT
AGTCCCTGGGCGGACTACGGCAAGGGGGTCTGGGCACGGGCATCCnCTCCGGGGCTTC
GCTAGCCG

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 689>:

GNMIH87TR gnm_689

10 AAAGAATAACCTTCGTGCAAAGTGCAGGGGTAATGGGGGTACATCCTTGGCTAATGGCCT
AGGGTAGGTCGATCCGGATCTTCTGAAACCTCCTGAATTGATTGATCACTGTGCAGAAA
AAGCAGGGAGCCAACTAACTGCGACTTGCTAGCAAATTGAAAAGTTAGCTCGAACC GCGC
GCTGGTACTCTATCTCGTTAGCAGGGATCCTGTAAGCTTCGTGCAAACTGTATAAG
GGGGTACATCCTAGGGCGGAGCTAACGAAAGAGGTACAGGTGTGCGAGATGCGGTACATC
TCGCTCGTGCAACATATTGnTGATCTGGCTGCTACAATGGGTCCCGAAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 690>:

15 **GNMIH88TR gnm_690**

TAGAACCGATTTTGCTGGTGTCAAGAAGGGTGATTCATGGGGGCAGCTGGGTAAGACAAG
GTAGCTTCCGACACACAAGAAGACCTGGATTAAACACCTTATTACGGGAAGGAAGCCCG
ACGGAGGATAGGTCTTACACTTCAGGGGAGAGCTGCCAAGAGTTAGATCGCGGAAGTCGA
AACTACTGCTATCACACAAACCAGATGCAGAAAAAGTAGATTGGATGTGTGATCGAGG
20 TGGGGAAGGGAAGTGTAGTGGTGGTAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 691>:

GNMIH89TR gnm_691

25 AAAACGACCAGCTTAGGGCTATAATAACTAAATGCGTTATAAAAATGAGGTGGTAGCAAA
AATAAGTTATACCGAGCTATAAAACCAAGTTCTTGGATTGATATTTGAAAAAACA
GTTGCAGCAGGGGAAAAGAAAAAACGGATTTATACAAAAGGGTGTTGAGTAAGAGAA
GTAGTCGGGGAGGAGGGAAGGGGAGAGGGGAGGAGAATTTGGTACTAAAATCCGATAC
TAAACTCGAAACCTAGTGGGGTAAAAAAGGAAAAACGGAACCAGGCGGAAATAACGCGAA
AGTCCCGACACGGCTCCGTCAGAA

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 692>:

GNMIH90TR gnm_692

35 TCCGGGGCTGACTAGGGTCCGTGGAGGGCTCTAGCCTGGGGGTCTCCCGCTACGCTGG
TCAGAAACCTGGTCTCTGCCAACAGCTCTGTCTCGAGGGCACTACTCCTCTCCTATGGG
GCTTTACGGGCATAGTCGACGCCGTCACTTCTTATACTACTCCACTAACCCCTCATAGTAA
GTAGACAAAAAGTGGTCTTCACCAGCGAGGGCTGGGGCTGCAATCAACCCCTAACTAGCC
GTACATTGCGCTTCAGCCTGGTCTCTCTGGGGCTTGCGGTTGGCGGCCGCTCCTCCCCG
GGGTGAATATGGCCATCGCCGGCAATAAGGTGGGGTTAGATCCGATACTATTACTTCCT
TTTCATTCTCTAGAATCCAGTCTTCCTAGTACTGCTCCAGCCCCCAACTCGGTCGTAA
40 GCGAGGTCGGCAGCAGAGGCCATGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 693>:

GNMIH91TR gnm_693

```
5  GGGTTGCCGGCTACCTCCGAGGTCCTCTCCTGCCGCAATAGGTCGACCCGGTCGGTATC
   TTGGGCCGCGAGCACCCTCGTTATTAAGATCTTCACCGACCTGGCGGTCTCCTCTACTACC
   ACTCCCGTGGCGTTCTCTATAGAGGCTATCCTCGGTCTCTTGCTTAAGAAATTGGCTCTC
   CTCTGGTGGTGGTTCGACTTCCGTCGATTCCGGCAGGGCTTTCTCAAAAATAAGTTCCTAAGC
   CGGGGCCGGGTACCTGGCTGGGCACCGGCTCTCCAGTCAACGACGTCGAGGTCAGCCTC
   GACTTCCCTCTACCAGAGCCCTCGGGGTAAATTGGGTAGATGCTCCATCACTCTCAGG
10  GCCAGCGTCAATCCTACCTGCCGCCACAGATTCGGACCAGACGAGGTCGCTCGCCGTACA
   TTGGTCCCCTCACCAAAGTGCCGCCTGCGTGGGCGTCTCAA
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 694>:

GNMIH92TR gnm_694

```
15  CCTATCTTGGGTAGTCTAGGGTTGGTGTCTTATCTCTATACCGTCCAAGTTCTATTCTG
   AGTTTTTGTCTAAGATCTGCGTCCCGGGTACTCGGGTGGCGGTAATTCTATTGTCTT
   CCTCTCCAGAAGCTCCGCCAGAGCCTGTGGCCCAATATTTGGCACCAGGGGGAGTACAGA
   CGGAGTAACCTCGGCATTTCTGTAGCGGTCTAATTTTGAGTAACTGCATTCAAGTGGG
   CTGGAGGGTCGCTCGGGGTAGTGAGAAGTTCAATAGTTCGGGTACTAAAACTCTCTTC
20  TTCTCTTGTGCAAATCCGGGATGGGAAAATCCAAGGGGAGAGGAAAATCTATGTTCTA
   AACTAGGGGTTTGCTCTTGCGGTTTACTTCCTACCTCTACAATCGAAGTAACGGGCAAGG
   CAGGGGCTTCGGGTCCTCTCCAACGAACATCTACTTCCCTTTAACGTTAAATCTAAAT
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 695>:

GNMIH95TR gnm_695

```
25  CTCAAAGATAGAGGAAAAATGTAAGCCACGCAGCCTAGAGGGACCAGACAGAGATGCAAT
   CAACAAAAGAAAGGGGCGGTGGGGTTGTAGCGGGGACCCACGCAGGATAAAAGCAAAGTC
   TGCAGCGCAGGAGAGTCCAGCTGCGGTAACCTATTGCAAAGACAATGGGGGTAACCTGC
   TTGGGCGACGGAATCCACAAAGGGACATAAAGTTTCAGGCTCTATGGGGAATATAGTGGG
30  TGGAGGCTCCAGACAAGATGAACGAAGCAGAAACAGCTGAGGCCGAGGGGAA
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 696>:

GNMIJ55TF gnm_696

```
35  CCGTCCAACCTCGCTCAATCAGGCTGGCACACGTGATCGTCTGCGTGCTGCGCTGGAAGCG
   GCCGGTCATGCGCGACAATTACAGGTTGAGCATGGGCCGGTGACGGATAGTCGCGCCCGC
   CGAATGGCCCTGGTAAGAAAAGCCAGCCAGTTGCTGGCCGAGGACAT
```

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 697>:

gnm_697

```
40  AAATCGAAATAAACCGTGTTGTAACGGGAGACCGATGCCGTCATTGCGCGCAGGCGGGA
```


ATCTAGACCATTGGACACCGGCAATATTCAAAGATTATCTGAAAGTCCGAGATTCTrGAT
TCCCACCTTTCGTGGGAATGACGGGATGTAGGTTTCGTGGGAATGACGCGGTGCAGGTTTCC
GTGCGGATGGATTTCGTTCATTCGCCGCGAGGCGGGAATCTAGACCTTAGAACAACAGCAAT
ATTCAAAGGTTAGCTGAAGCTTTAGAGATTCTGGATTCCCACCTTTCGTGGGAATGACGGG
5 ATTTGAGATTGCGGCATTTATCGGAAAAACAGCAACCGCTCCGCCGTTCATTCGCGCA
GGCGGGAATCCAGACCTTGGGATAACAGTAATATTCAAAGATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 698>:

GNMIK41TF gnm_698

10 CCGAGTCCGTGCCGTCTGAAGATGCTTTGGGCAAATGGTGGAAAACCATAGAGGAATGGC
GTTCCCGAGATTGCTTGTGGTTTGACAACGGCAGCGAAATTATCAAGCCACAATATGTGA
TTCAGAAGCTTGCCGAGATTACGGGCAATTCGGCAATCATCACATCGGATGTAGGGCAGC
ATCAAATGTTTGCGGCTCAATATTATCCCTTCGAACGTCGCGCCAATGGCTCAATCCG
GCGGTTTGGGTCCGCAACACAGGCGCCTCTTCAAACGTCAGGTCCCGAGCGCCTGCTGC
15 ATGGCTTTTTCGAGTTTGGCGATTTCGTTAATC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 699>:

GNMIK42TF gnm_699

20 CCGTGGTGTGACTGCGTACCTTTTGTATAATGGGTCAACGACTTACATTCAGTAGCGAGC
TTAACCGAATAGGGGAGGCGTAGGGAAACCGAGTCTTAATAGGGCGATGAGTTGCTGGGT
GTAGACCCGAAACCGAGTGATCTATCCATGGCCAGGTTGAAGGTGCCGTAACAGGTACTG
GAGGACCGAACCCACGCATGTTGCAAAATGCGGGGATGAGCACGATGGGCGTGGGTCTGC
CTTATGCGATTGGTGCAAACTTGCCGCCCCGGATCAAGACGTATTCTGTATCACCGGCG
ACG

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 700>:

GNMIK48TF gnm_700

30 CCGGTTTCGGTTTTTTCCGATAAATTCCTGTTGCGTTGCGTTTTTGGATTCCCGCTTTTG
CGGGAATGACGGTCCGTGGGGTTTCGGTTTTTTCCGATAAAGTCCGTGCTGCGTTGTGTG
CTGGATTCCCGCCTGCGCGGGAATGACAGCCGCCGACGGGAAACGACCATAACAAATTA
TTGACAACCCCATTTATTGCGAAAGTCAGCCTAGGAGAATCCTCTGTAAAACCGGTCTGA
GTCTTCTTTTCCCCGTAATAAATTTATCCGCCGCTCTTTACCACCAAATTCATTT
ACAATTTGTAAAAATCGTGTGCGC

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 701>:

GNMIL13TFB gnm_701

CGTCCGACCAACCGTTCAAACTTTTCATTTTACCCGACCACGCAAGCCGCCGAACAAAA
ACAAGGGGCTGTCTAGATAACTAGACAAACTTGATTTTACTAATTGTTTTAAACGGA
CCAGGACTTTTAATTTAATGGTGGTTAAAAGGCATTGGAATTCTTTAAATCAAGTTAA
40 AA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 702>:

GNMIL82TFB gnm_702

5 CCGACAAATTTTGGCGCATGGCTTTGATGCGGCCGCGCATTTTCATCGAGTTCGGCAAT
CCATTGTGCTTTCAAATCATCATTTTCAACATCGTCGCAATGGTGTTCGCACCGTGTGA
AGCCGGGTTGGAATACAAGGTACGGATGATGGTTTTGACTTGGCTGTGGGCGGGGCTGC
TGTTTCTTCATCTTCGGCCACCAAAGTGAACGCGCCGACGCGCTCGTTGTACATACCGAA
GTTTTTGAATAAGAGCTGTCTATCAGCAATTCTGTATTGTGTTTTATGATCACTCGCAA
GCCGTTTGCATCTTCTTCCAAACCAT

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 703>:

GNMIM22TRB gnm_703

15 CGGTTACGGGCGCGAATTGTCCGCATTCGGGCTGTACGAGTTCGTCAACGTCAACACCTA
CTGGGAGAAATGACACACCCCGTGCCGCTTCATACGGTATCGGGTTGCGCTAGAGCCGA
TTAACGGCAGTATTGTTTACGGCGTTATTGTATTTCGAATCAACTCATCCTTGTTTTT
TGCATTTGAATTTCCACCGCCTTCAGGTTCATTTTGAAATCCGGCAGTTTCTTCTTT
GGTCTGCCGTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 704>:

20 **GNMIP07TF gnm_704**

CCGCAAATACAACCCGATTTTCGACTGGTCGGAACACGACGTGTGGGCATACATCCTCGC
CAACAATGTGCCTTACAACGATTTGCCACGTAAGGATCCCTTACCGAGAATGCCGCAAAA
CACATCAATGACTATCTCGCCAAACGCGGCAAAGGCTTGGGCGTACGCTTGGGTGTGAAA
25 ACCAGCGGCTGCTCGGGGATGGCGTACAACCTTGAATTTGTGACGAAGCCGATGGCGAC
GACCTGATTTTCGAAGGACACGGCGCGCATTTATATCGATCCGAAAAGCCTGGTTTAT
CTGGATGGCAGCAAGTCGATTACACCAAAGAAGGTTGCAGGAAGGATTCAAATTTGAA
AACCCCAATGTCAAAGACTCCTGCGGCTGCGGCGAAAGCTTCCACGTTTAAGGCATAAAA
ACGGCGGGACCGTATCAAACCGTCCCGCCATTTTTACGCTTACTGCCTGTTGTAGCTGC
CTTTGCCTTTCCCTTTCCGTTCCACCTTGTGCGGAACAAAT

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 705>:

GNMIP26TR gnm_705

35 GACGTCGAGGTTGATGGAGTGGCTGTACCCGACCAGCACCAGAACCAGTGCAGTTTCACC
GACGACGCGCGGATGGACAACAAGATGCCTGACACGATGCCCGGCATCGCGATCGGGGC
GACGATCCGCACGATCGTCATCCATTTGGAACGCCTAACGCGTAGCTGGCTTCTCGCAG
TTCATCGGGACCAACCTGAGCATCTCCTCGCCTGCCCGAACCACCACCGCAACATCAG
CAGGACCAACGCCAACGCCACGGCAAAGGCGCTCTGCTGAAATCCTATGGTGGCGATCCA
CAGGCTGAAGACGAATAACGCCGCCACGATAGAGGGCACGCCGGC

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 706>:

GNMIP64TR gnm_706

ATGGGCGTGGCTTTGGCGGGGCGTGCCGTGCCGCCGGTGCAGAAGTCAGCCTGATTCAC
GGACAGCTTCAAACCGCGCTGCCTTTCGGCATATCCGATACGGTTCAAGCCGTCAGTGCC
GAAAATATGCATCGCGCAGTGCATCGTTTAATCGACAAACAAGATGCTTTTATTCTGTT
5 GCGCGCGTCTCAGACTATAGGGTTAAGAGGAGGAGTACTCAGAAATTCAGGAAAGATAGA
ACTGCCAAACCGTTATCCATCGAATTGGCTGAGAACCCCCGAGATTTTGGCTTCTATTGCC
TCATTAGCGAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 707>:

10 GNMIP74TR gnm_707

AGTGGGTGTCGATATTTACAACTTGGGTAACCTCACCCGTTCCAACCAGTCTAGCAATAT
CAATCATCGTCCGTGCCGTCAAAGCCGGCGATGTTTTGCAACG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 708>:

15 GNMIQ34TF gnm_708

CCTGTCGTCTTCGGCATCGCCAAAGAAGGCTCGCTCAAACGCGTCATTACCGGCGAAGAC
GAGGGAACGCTGGTTCAGTCTGATTGACCATAGTGTGCGGCAGATATAGTCGCATATGGG
CTTCAGACAGCCATTTATTATATGGAGATTATAGTGGACATCCCATGGCATCGACATCAC
20 CTCTGGTGGCAGCATCCACGCTACCCACCGCATTTCGATGCCCCAAAGGCAGCACTAA
CATCGAGGCTCCGGCGGAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 709>:

GNMIQ67TF gnm_709

AAACTGACGTTTGTCTTTCCAGGATGAGGTAGAACCATGATTTATCTGTTTACAGGAAAC
25 ATGGGGACAGGCAAAACCTCCCGCGTCTCTATGATTTTGAACAACGAACACGGATTG
TTCAAATGAAATTGGCACACGGCACATATGTAGACAGACCGCTTACTTCTGCCATATC
GACGGATTGGATAAAACCGCAGTTGAAAGCCCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 710>:

30 GNMIW65TR gnm_710

TCCATCGGGTCGAGCGACTCGTCCAACCTATGCCGCCTTCTCCGCTACGGTATCCGTACC
AGCCTGCAGTCCAAACATGTCTTGCAAACTTGCGGCTTCCGTTGCACAAGCCGATAACC
CCTTCAGTTATAGTGGACAGCAACCGCTTTTTGAAAGACAGCAGTGATATTGTGTTGGAT
TTTCCGTTTTAAAGATTGTGTGTTAAATGGCGGACAAAGCACCGAGGAAGGCGAAGAAAT
35 TATTTTAAACGCAATAACAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAG
CCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAGCCAG
AGAGAGACAAGAAATCTTTTTAATCAAACCTTGCTTTTGATGAAATTGATCGGCTTTT
TGACGCACAAGCATTCTCAAATCTCTCGCTATACCGCAGACGGCAAGCAAGCCGTTTG
CGCAAATCAAACGACAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 711>:

gmm_711

5 CAGTTGGCATTGTTAGATAATTTGATTCAAAATGGGCGGAACTGGTTCGAACTGGGGC
AAAAATCACCAATGyGACTTTCAACCGAyTGGACGCAAACGGCTAATGAAGGTATTGCA
CTGACACCATCCCAAGTAGCACAATAAAAAAGAACGCTTAGTTCCCTTTCTGATAAA
GCTAAAGCAGCTATTGACGCCGCCGCGCATTGCCGTGCTTGATGCnTACACGGGG
CAGGATTCCAACACACTCTATTACATGAGCGAGGAAGATGCGCTTAATATCGTCAAAGTA
ACCAACGATACATACGACCATCTCGCCAAAACATCTACCAAACCTGTTGTTCCAAACC
10 CGTTTGCAGCCATATTTGAATCAAATCAGTTTCAAATGGAAAATGATACGTTCACTTTG
GATTTTAGTGGTCTTGTTCAGCATTTAACCATGTCAAAGAAAGTAATCCGCGAGTGGTAC
CGAGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 712>:

15 GNMI74TR gmm_712

TAATGCCTGTAAATCCATGTCTTTAACGGCAGCTCTGGCAGAAGCGGCCACAAGTTCTTG
TTCGACCGCAAAGCGTTTACCTCCGCCATGCGATGGAATACCTGTCAAGTGTCCCGCAGGC
GGATAAAATAAACTGAAAAAGAATAGGTATCAGCAGCCGTGCTTGATAGATTTTCT
CCTTTGATGAAAAACAATTGTATCAAAATTGTAATATAGTGGATTATCnGTCGGCGTA
20 ACGCTATTGGACGGTTCCTCGTCATGCCCCGAATCCAGTGAAGGAAATTGAAGTGGCCCGC
GTGTTACAATATATCGGACTGCAAAGCGTTTCGACCAGGAGGCAGCCGTCCGTTTTATG
CTTTAGTGATGCGGCAGCAGTTTTTTGGGACGGCAAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 713>:

25 gmm_713

CGTACGGCTTTCTCTAAAAATACCTAAACCGTCATTCCACGAACCTACATCCCGTCATT
CCCACGAAAGTGGGAATCCAGGACGAAAAATCTCAAGAAACCTTTTACCCGATAAGTTT
CCGTGCCGACAGACCTGGATTCCCGCCTGCGCGGAATGACGAAGCTATCCATACGGAAA
CTGACACCGCGTCATTCCCGCGAAAGTGGGAATCCAGAACGTAAATCTCAAGAAACCGT
30 TTTCCCGATAAGTTTCCGTACCAACAAGGCTGGATTCCCGCCTGCGCGGAATGACGAAG
CCATCCGCACGGAACCTGCCGCGGGCATTTCGGATATCGTGGTCTGGCAGCTTGGCGG
CAGGATGCGGAAGACTTCAACGAAGCCTATTGCCGCCATGTACGCCGCAAAATGAACATA
CCGGAACATTTGGCATATTTTGGCGGAGAGCCGATTATGATCAGGCAGAACGACTACGCG
CTTGAAGTGTCAACGGCGACATCGGACTGATTATGGAAGATGTGCGACGGCAGGGCAGC
35 CTTGCCGCCCTATTTTGCCGATGCGGACGGATTAAAAAGGTAGCGGTAAGCTGCCTGCC
GAATTTGAACCCGCATTCCGCATGACCGTCCACAAAAGCCAAGGTTCCGGAATACCGGGAA
GTATGGCTGCTGCCGCTTCCGCCGACCTTCGGACGAAGGGGACGATGCATTGTCCGGA
TTGAGTAAGGAGCTGTTATATACCGCCATTACCGCGCGAGAGAGAAGTTCGTATTCTTC
GGCGGGGAAGAAGCCTTCCGGCAAGCTGCCGCCACCGTCAAAACGCGTCAGACGGCATTG
40 GGCAGTATGCTCGAGCGGGTATTTTCAAGAATAATCCGCCCGAATGCCGCGCCGCCG
CCCTTATGCCTTTTCAAACGGTATAGGAAAGTGGTTCCCGGGTTCGCGCAAAAGCAAG
CGGATCGCTCGGATTCGCGGCTTTTGTGCTTCGGCTTGGTTTTTCATCATATCGGCAAC
ACGCAACCCGCTGAGCAAAATGCCTTATCCATGAAAATCGGATG

45 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 714>:

GNMJD95TF gnm_714

CGCTGCGGCATAACCTTCCGCTTGTGCGACGGCAGTATAGGCAGCCGTGTTGACAATGGC
GTCGGGTTGGAACTTTTGACCATGTTGCAGACGGCATCGGCATCGGTAATGTCTAGGGA
5 TGCGGAATCCGTCGCAATGGTTTCCAGTCTTCCGGAAGACGGTCGCGCAGGCAGCGTGC
CAGTTGGCTTTTCGAGCCTGTCAATAGGATTCTCATGAGGTATTTCTTTGGTAAAAGTG
TATTGTAGGACTTGCTGTCGGTATTATAGTGCCAAAATTTGCCGCTGTCGGGCAACCA
ATAAATCGACTTTGCCAGTTTGGCGGCAGCGGTAACAGCATGCAAAGTGGTATGATTCA
ACTGTTTGTGTCGTGTTGACAATAATCAATACACTCATTTAGCCTCCTCAAATCACT
10 TTGGCTTCGTTTTCATTTTCAACCAATTTCGGCAACGCTTGCTACTTTTACGCCTGCC
TGACGCGCCTTAGGTTTCGGCAAATTTTACCCTTTTCAAACGAGGTGAAATGTCGGCAACC
AAATCGTCAGGAGTCAGTTTTTCAAAGGTTTTTCTTTGCCGCATGATATTGGGAGT
TTGACAAAGCGCGGGTCGTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 715>:

GNMJE78TF gnm_715

GGGTAATAACCGATGACTTTGACGAACGAAGCGCTTCGCCAAGCGTTCCAATGCCGTC
TGAATCTGCGGTACCGGCGGTGCTTTCGATGTCGATGAAGAACAGGTATTTCCACAAA
ACGATTGCTCGGACGGCTCTCAGACTAGGTTCATGAAATACCGACTCCGTGAG

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 716>:

GNMJE88TF gnm_716

AACCGCCCAAGCCATGATTGCCAACACATCGACCGCTTCCCGCTATTGAAGTTGGACCA
GGTGATTGATTGGCAGTCGATCGAACAATACCTGAACCGTCAAAAACCCGTTACCTCCG
25 AGACCACCGCGTCCGTCGATCGTCCACGTGGTGTCCATGTTCAAAGCCGTTCTGCTAG
GACAATGGCACAACTCTCCGATC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 717>:

GNMJH15TF gnm_717

CCGCATAATCGAGTGATCCCATTTCTGCTTGCCATCGGTTTCAAACCCGCAAGACAAGG
30 GCGAACCGCTCAAAGTCGCGCTTACATCTTCTGCGAGCCGCGCCGCGACATGAATG
TCTATCTTTAGGCTGGCAACTGATTGACGGTATGGTAAACGTCTGACGCATCGTCCACG
ACCAATAAGCGAATGTTGCGGCTTCGGCGGCACATTCTCCGTCAAACAAGCCGATATT
CCGGC

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 718>:

GNMJJ79TR gnm_718

GTATGGGTTTTCCGGCGCGGGGAAACGTCAGGCATCGCGCCGTATCGAAATAACCGGAC
CCGCAGACCCAACGGCAGTCTGAACGACGACCTCGTCCAACAAAGCCAGGTCTTCTGCG
40 AAAGCGCGGACATTGTTGACACATGCCGCCGAAATGGGGAATCTGCGCCGAAGGTTTC
GGCACAGTACGGTGCCGGTAGCGGTTTTCGCAAATAAGCCGTATCGGTATTGCTTTACGCC
TCGATATTCGGCACAGCGTGTTTTGGGCATAA

-830-

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 719>:

GNMJJ84TF gnm_719

5 ATTTTGCTCAATATTAGGAAGGTTTTAAGCAATTGAAAATTTGTTGGCGCATTTTTATGC
GTCAAATTCGTTAACAGACTAGTTTTGCAAAGGTCTCTATATTGTTTCGATATTTTTGAA
GACATCGATTTTTTAGGGAAACGATTGTTTACGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 720>:

GNMJM49TR gnm_720

10 CGTTAAACGACGCAGCCGGCACTGCGCATTAAAAACGTGCCGATTGTAAACGCCGCCAAT
ACCGCCAAATCGGGAATGCCGTCTGAAGCCAGCCACAATGCCAGTAGGTCCGCCACAGT
AAAAGCAGCGTCCCAATGGGCTTGTCGCCCGCATCAGGCGCAGGTACACATCCAAACGG
TCGGACAGGCGTAAAAATAAAGGGGATTTAGGATTCATATTGCCGCGCAGCTTGAAAAA
CGGTATTTTAGCCGAGAAAACGTTTCAGTTCGGGCAGAAAATAGTCGGTAAACACGATT
15 CGTCAACGTGCCCGCCGGCTCGGTAATGCTGCGCGTGTATCGAAAATATCCTTGATCGC
GC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 721>:

GNMJN57TR gnm_721

20 CGGCTGCTTCTATCTTTGATGCTCCACCATAAAGGTATTGCCCGAAACCGGCGGATGGAG
GTTTTGTTTTCTGCCGCCGCCGTGATCGCTTCGTGGTTCGCCAAACGCGCCTGTTGCA
GCCTCATTTGCGCATAATCCTGCTCCAAGGCGATTCTGTATTTTCGCCTTATCCAAAG
CTGTGATATTGAGCCTGTACTGGTTTTGCTGCATCACAACGGCAAAACGGCAACGCACA
CCGCATCCAGCAGAAGGAAATCACTTTGTTTCAT

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 722>:

GNMJQ71TR gnm_722

30 CCCATACTATATGTCTTAAGTGAGGAATACATGGTTCATTGATGAACCCAAATTTGACCC
TTGTAGCAGATGCTGTCAAGTCCCCACCCATATGTTCTTGCCTGTGAGACAACGATACA
GCCCTTGTCGGTACGAATATCGTCTATGCCGCCATCCACAACCTTCGGCGGTATGGCGGG
CGCAACCGCAAAGTTCGGATTCCGCAACGGGAATTTTGACGCTGACGGACGACGACAAA
CAGGCTTTGATGGACGATGTGCAGGATTATTTTTCGGGTCTGATACCGTGAATTTATAAA
ACCTCAAAAACGCGCTTTTTAGCGCGTTTTTTTATGCGGGTAATACAAACCCCTGCCCCA
AGATATAAAAATCAATCCTAGACGCTTCGAAAAAGCCCCTGAAACGATTAATTGTGTAT
35 CGCGCGGACAGGTTTTAAAAAATGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 723>:

GNMJQ51TF gnm_723

40 GCTTCATCGTCTTCATCCCAATCTGACCCCAACATTGCGCTTTTGGTTTGACGTGATGA
CAGGTAAACATACCTTTAATTCGGTCTTCACGGGCTTGGTTCGGGCTGTATTCGACGTTG

AAAAAGTCATTGCGATGTCAACGCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 724>:

gnm_724

5 CAATCCGTTAGCGAGGTGCCGCCGGCTTCCATTGAGGTGAGGTGGCCCGGCTCCATGCA
CCGCGACGCAACGCGGGGAGGCAGACAAGGTATAGGGCGGCGCTACAATCCATGCCAAC
CCGTTCCATGTGCTCGCCGAGGCGGCATAAATCGCCGTGACGATCAGCGGTCCAATGATC
GAAGTTAGGCTGGTAAAGCCGCGAGCGATCCTTGAAGCTGTCCCTGATGGTCGTCATCT
10 ACCTGCCTGGACAGCATGGCCTGCAACGCGGGCATCCCGATGCCGCCGAAGCGAGAAGA
ATG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 725>:

GNMJV83TR gnm_725

15 TTTAAATGGAAATTTGAACTTTTATCTCACTGTTGTTAAACGCCGTTGTAACCCCTTT
AAATACAGCTCAAATGCGCTTTGGGAATGCCGTCAAACCTGCGTAAATGACGTTTTGCC
CGGTTCCAAAGTTCTCAATTCATTGATATGGTTTTGTCGTTGAGCAAAATAACTTTCA
TCTGCTTCTACTTCGCCATCAAACATTTCCAAATGCGGACTGTTTTGATAAATAAGTAAT
CGTAAACGATGAAATAATAGGCTGCGGTACTTTTATTAACGCCTACTAACTCTGCTGTC
20 GTTCTTGCAGTTACACCTGCGACAAACAGTTCAATGAGTTTATTTGTTTATACCGGCTTA
GACGACTTTTTCTCATAGGGCAACTCTAACTTAATTTGAATTTCCCTAGTTATCCCTAA
AGGGGGGAAACCCAAAGGGGGCCCCCCCCCCCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 726>:

GNMJW65TF gnm_726

25 CGAATTTGTCGGCGGCGGCGGCAAAATCATACTTTGCAAAATTTAACAATTTGCAGGG
GCAGAAAACAGGAAGCTTTCTTTTTTCGTCGGAAAATCCTTATTTACCGCCTTGAGCC
GGAGCCGGTCAAAGGCAAAAATTTACCGTTTTTTATCGGTAAAGAATTATCAGATAA
AACAAATATTATAGGAAAAATACGACAGGCGGGTTTTATCGCGCATTGCCTGAACTGAA
AAATACAACCGTTGTCAAGACTGGAGAAAATGCCAAAATCCACTATATTGTCTGCCTTA
30 ATTTATTTGAAAAGACTGTGCTTGAATATCAAGAGTGGAAGAGGAAGCGATGAATACAC
CGACTGATTTGAAAGTAACCAACGAGACGGAAGATTAGAAGCCATTGATTTGGATAAGA
TTCACCGTGTGCTCACTTGGGCGGCGGACGATTGGAAAATGTTCCGTGTGCGAGGTGCG
AGTTGAAATCGCACATCCAGTTCTACAACGGCATCCGCACCGACGACATCCACGAnACCA
TCATCAAAGCCGCTGCCGATTAAATTTGGAAGATACCCCGGACGGTGATGCTGCCAACT
35 TACTGATTTAGTGTATGATGGTGTGTTTGGAGGTGCTCCAGTGGCTTCTGTTTCTATCAGC
TGTCCCTCCTGTTGAGCTACTGACGGnTGGTGCGTAACGGCAAAAGCACCGCCGACAT
CAGCGCTATCTGCTCTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 727>:

40 **GNMJY95TF gnm_727**

CTAGAGATCCCTGAAAAACACACAGCCGGCACACAGACTATCTCGCCTACCGCGACGCG
ATTGCCAACAACTGCTGGAAGTCCGTTTCGCCACTCGGCAAATCGACAGCCTCAGCAGC
AGCCTGCGCGGAAAGTAGAAAACATCCGCAGACTCGAACGCGAAATCCGCGACATCTGC

CTCGACCGCGTCCATATGGGACGCGACTACTTCATCCAAAACCTCCTGCCGAAATCACC
AATCTAGAATGGATTGAAGAAGAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 728>:

5 GNMKA52TF gnm_728

GGTCAGCCCGGCAAGGGTCAATATCTGATCGATATGCCGATGGAACGTGTCAGAAGGC
GGAGGGCGGCGTTTTGTATGTGCGCGACATCGCCAGTACAGCCGCAACATCCAAGCCGG
TATTGCCTTTATTGTGCGAAAGGCGGAACACCGCCGCGTCAGGGTGGTCGCATCGGGCAG
CAGGGCGGCAGGTTGAGACCGCATTGCCTGCGAGAAAGGTGGCATGATTGCTGTCGGCAT
10 CGGTCGTCCGTATTCCGCCGCTGCGTATGCAGCATGAAGACATTCCTTCCTGATACAGG
GGATTGCCTGCAATGTGGCGGAAAGCCAAAAGATTGCGCCTGCCTCATTGAGTGAATAGG
CACTTGTGCGCATTGCACACGTTCAATGGCTGGCGTTCTATTGACCAACTGCAAAGCGTC
GTTGCAACGCTGTTGTTG

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 729>:

gnm_729

CATTTCCATACCTATGAAATCAATAGCAGGATTTAAGTTCAAGTTCAGCTCCAGATCTTC
TAAGCTGGAGGACAAAAAGGCGAAAAGATATGTACTGGTTTCGCCTCTTGTTGCTTCTT
GCTGATCAAGAACCCTCCCCGATGTATTGCGAAACAAATGTGCCACGCAGTATATGTTTAC
20 AAGCTCGCAATCCCATCCCTGTTGATCAATCAGTTGGATATTGGAATTGAATCAAGACA
AATGGGTAAAGACAATAACTCAAAAAGGATCACACCTTGCTTTCAGTTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 730>:

gnm_730

AAGGGGATACTAGAGCATACTCAGTGaAGAAGCAAAGAAAATCAACAGGTTTCAGTAGAA
AAAAATCGAACTGGGATCGTAAGTTTACCAGGAATTGACGAAACCCGCGAATCTCGTTA
CTCTCTTCGAAAGCCCCAACACGAAACAGTCTTGTCAGTTGCTCAAGCTCCGTGTTTCC
TGAGAAAAAACCCATAACCTAATCAACAACCCAATTGTTAAAAATCCATCTTTATGAGAA
ACAAAGAGAAGCTAAATCAGAGAGGAAAGTTGGTTCATACCTCTGAGTCTGACCAGAGAC
30 GACGGTAGCAAAACGGAAATTTGATGCGAGAAAGCCGAGAGGGTTTTTCTTATTTATTT
TTTAGTCCTTTAAACCGACCTTTGACAAAAAAAACGACTTTGTGAAAACGGGCCGGTT
CATATTGGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 731>:

35 GNMKV51TF gnm_731

TCGTGGTCGAACCCTACATCATCCGCCATGACGTTCCGATCGGTGAACGCAGCAACTACC
ACCTCTCCAGACATATGAACTTTATACGGCTTGGGCGGCTGCGGAGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 732>:

GNMKY49TF gnm_732

5 CAAAATCGAAGGCGGGTTTGTCTGTACTCGGCGTAACGCATAGCGACACAGAAAAAGA
TGCACGCTATATCGCCGACAAAATCGCCATTGCGCGTGTGTTGAAGACGAAGCGGGCAA
GCTGAACCTGTCTTTGAAAGATGTCGGCGGCGCGGTGCTGGTGTGCGAGTTACGCT
10 TTATGCCGACGCGGAAGCGGGCGGCGGCTTCGTTTTCCAAGCCGCACCTGCAGAACA
GGCGCAGCAGCTTTACCTGCCAAGCGGCGGAACGTGTGCGCGGACACGGGATTCATGTCGA
AACAGGGCGTTTCCGCACGCATATGCATGTCTCTAACGTGCTGAAGCACCAGTGAATCG
GTTCCGTACTATCTGTACTGTCTGCGGCTTCGTCGCTTGTCTGATTTTTGTTAATCCA
CTATAAGACCGTTGGGCATCTGCAGCCGTCATTCCCGCGCAGGCGGAATCTAGTCTGT
15 TCGGTTTCAGTTAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 733>:

gnm_733

15 TATGCTTGGGACAATAGCGAAAAACACCGCCTTGCCTTCGGCAAACGGGAAAACCGCA
AGGCGATGTCCTGATACGGATTTCGGTTTCTGCTCGTGGCGAAAACGATGTTAGCCCCA
CCGAAACCGACTTCCCTGCAAACGCGCCCTTGTGTCGCGCTCCATAATCCCCGGCCCGC
CGCCCGAAATGACGGCAATGCCGAATCCGACAGCCGCGCGCCAGACGGCAGGCGAACG
CATAATCCGCATGATTCTGCGGCGTGCAGCGCTGCCGAAGATACTGACTGCCGGAAACA
20 CGCCCGCCAATGCTTCGTCTGCCTGCCTGCGTTCGGCATCATAACGTGCCTGCTCCGGCA
CACGGTTTGTATTCTCCATTCCATCTCCGTTCAAAAACAGCGATTGTACACCGTCAAAA
ACGTATAGTGGATTAAACAAAATCAGGACAAGGCGACGAAGCCGACAGTACAAATAG
TACGGAACCGATTCACTTGGTGCTTCAGCACCTTAGAGAATCGTTCTCTTTGAGCTAAGG
CGAGGCAACGCCGTACTGGTTTTTGTAAATCCACTATCATATAGATTTTTATGCCATTTG
25 GTCAGAAACAGCGAAGACAGGCGAGGAAACGCCTTCAGTTCCATCGCGTCTTCAAAATCA
TCCCAAACATCGCTCAAATTCTGTTTGGATATGCCGTATCCCGTCCGGCAAACATCAGG
GTCTTTTTGCTTTTGGCGGCTTTTTGAATGCCTTCTCTGTTTTTCGGGTATCTGCTGC
CATCTCAACTGACGGTACAGTCGTAGCCGTGCGCCCCAAAAGAGGCATACCGTTGCGTG
TCTTCGCGGACCGCGCGGTATTCCCAACCGTACATATCCCGTCCGCACGACGGCA
30 CTTGCCTTATATATGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 734>:

GNMLC88TV gnm_734

35 AACTACACAACCACGATTTAGCGAAAGGTATAAAAAATGCGGGTCAGAATTTAACATCAA
TGCAAACGCTTGATGAGCATAATAAACATTGATGACTGCGCATTTAAAACGAGATACAC
TTAATGTTACATTATCTCGTCAAACACTAATCAGTATTATTAGTCTTATGTACAACAAG
ACAGCATTTATTTAAACATGGCGTAATAAATAGATAATAGTAATTCAAAGTCATTC
TTCATTTTCATGGAACAAGAAAGTGAAGCCTTTGATTTATGTATTGGTGCAGATGGCATA
ATTCAATTGTTAGAGAAGCTATTGATAGCCAAAGCAAGGTTCAATATCAAGGCTATACAT
40 GCTTCCGTGGGCTAGTCGATGATATTCAATTTAGATGAAACGGATGAGCTAAAGAATTTT
GGGGCAAACAGGACGCGTTGGTATTGTGCCATTAATTGATAACCAAGCATATTGGTTTA
TCATAATCAACGCTAAAGAAAAAGATGTCAAATACCAATCATTGGTTAAGCCACATTTAC
AAGCAGGATTTAATCATTATCCCAATATTGTAAGACAAATATTAGATAAACAAGTGAA
CAGGCATTATATAACGATATTTATGATATGAAACCACTAAAATCTTCGTAAAGAGC
GTACTATTT
45

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 735>:

GNMLC88TH gnm_735

ATATGAGCGTCGGAGTTATAACGAAAGACATTTATACAAAAGAAGACGAAAAGATCTTAG
TTAATACAGGTGTCTTACCTGAAGATAGAATTATTGGTGTAGAAACAGGTGGTTGCCCTC
ATACAGCAATTCGTGAAGATGCTTCTATGAACCTTTGCTGCTATTGATGAGTTATTAGAAC
5 GTAATGATGATATTGAACCTTATCTTTATTGAATCTGGTGGCGACAACCTTAGCAGCTACAT
TCAGTCCTGAACTTGTAGATTTTTCAATCTATATTATCGACGTTGCTCAAGGTGAAAAAA
TCCCTCGTAAAGGTGGACAAGGTATGATTAAATCAGACTTTTTCATCATCAATAAAACGG
ATTTAGCACCACATGTTGGCGCATCGTTAGAACAAATGGCTGAAGATACAAAAGTATTTA
GAGGCGACAGACCATTGCGGTTTACTAACTTAAAAACAGATGAAGGTCTTGATGAAGTGA
10 TTAAGTGGATTGAACGAGATACTTTACTTAAAGGATTATCATAATGTCTCAACAAGCTTG
GACAGGTCAACTTGATTTAACCCTATTAAATAATGGAAGTCGTTCCGTTGCACGTGATAT
CTTTTTTGGAAAAGCATTAAAAGTTAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 736>:

GNMLC90TH gnm_736

AACAATCATTATGAACCCAAACCCCTTCCGTTTCCGCCTGACTGCCCTTGACGAAGTACG
TATGCCAATCGGCGACGGTCAAATTGTAAGCTTTGACCGGCTGCTGTTTGAAGGTAATGT
CTGAACC

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 737>:

GNMLD05TH gnm_737

GTACGGCGTTACCAACCTGCTGCTGCTGGGCAATTTTGCTGCCGCACAAAATAAAATTAT
CAGGGAAAGATTGTAAGGCAGCTAATCACTAACGGTTAACGCCGATTCTGTTTCATATT
GAAAACTTTGCGCATATCTCCTGTAATACAAACGGCTGGTTTTGTTGCTGTTGTCACGG
25 ATGTATTTACGGATACACCTGTTTTCGGACGTAATGGTTCATGAATATCGTTACGGTTA
CCTCCATTTTTAACAAATGCCATTTTTCTAACATTTGTCCGAATGATTTCATATCTTCA
TGATTTGCAACGTGTGATTGCTTTCCGCATCATCCAGTTTTGGAAAATGTCCTATTGCT
GATCCAACAGTCTGATGGGAAATCTGCAATGTTGAGGAAATGAAATTTGCCTTTATCC
CTCCTCCCGATAAATATCACTCGGCTACTTATCTTAGGAACACCGAAATCGGCTGCACTC

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 738>:

GNMLE03TH gnm_738

TCGACATTGCCAACAGCGTCCCGGGTGTTCGGATAATATGACGGACAACGGCAGAACCG
ATAAAGCCCGCGCTACTGGCAACAAGTGCCGCTGAACAGCACGAAGCCTTCCGTTTCC
35 ACCATATTTCCACCGATGAAGTCTATGGCGATTTAGGCGGCACGGACGAGTTGTTTACCG
AAACCGCGCCCTACGCGCGTCCAGCCCTACTCTGCCTCTAAAGCGTCCAGCGACCACC
TCGTCCGCGCGTGGTTGCGTACTTACGGCTTGCGGACCATTGTAACCAACTGCTCCAACA
ACTACGGTCCTTACCATTTTCCGGAAAACTCATTCTTTGATGATTCTGAACGCGCTTG
ACGGCAAACCGCTGCCTGTGTACGGCGACGGTATGCAATCCGCGACTGGCTGTTGTGCG
40 AAGACCACGCGCGCGCACTGTATCAGGTTGTTACCGAAGGTGTTGTGGCGGAAACCTACA
ATATCGGCGGCCACAATGAAAAAGCCAATATTGAAGTCGTCAAACCATCTGCGCCCTGC
TGGAGAAGTCTGCTCCCGAAAAACCGGCCGGTGTGGCGCGTTATGAAGATTGATTACTT
TCGTACAAGACCGCCCCGGCCATGACGTACGCTACGCCGTGACGCGAGCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 739>:

GNMMC45TR gnm_739

5 CGCGGGAATGACGAATCCATCCGTACGGTAACCTGCACCACGTCATTCCCACGAACCTGC
ATCCCGTCATTCCCACGAAAGTGGGAATCTAGCTTTTTGAGTTTCAGTCATTCCGATAA
ATTGCCTTAGCATTGCATGTCTAGATTCCGCGCTGCGCGGAATGACGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 740>:

GNMMC79TR gnm_740

10 GCGGCAGACAAGAATGGCTCGAGGCGTTGCGACAGGCCCTGCTTGCATCTAAAATCATTT
CCTACGCACACGGCTTTATGCTGATCCGCGCAGCGCCGAAAGCTACGGCTGGGATTGG
CCTACGGCACCCTGCGCTGCTGTGGCGGAGGGGTGCATCATTCGCAGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 741>:

15 **GNMMD20TF gnm_741**

ATCCCCGAGGAATCTAGGTCTGTCACTGCGGAACTTATCAGGTAAAACGGTTTCTTGAG
ATTTTGCCTCTGGATTCCCACTTTCGTGGGAATGACGCGATTAGAGTTTCAAATTTAT
TCTAAA

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 742>:

GNMMD36TF gnm_742

ATCCCCAAAATTTTTTTGAGTTTCTCAAAGCGATATGATTAGACTGTTGAGAGGTGAAA
GTAAACAACAGACTTTCAATGGCCGCAATTTGATGAATAGCAGCAAGCTGTAGCCTGCA
TGAAACCTAAAATCCATGCGTAAGGTGTGTGCTTCAGCACGCACGCTTCCATGATTTAC
25 GGCTCAATGCCGTCTGAAAAGCTCAGATTTTTTCAGACGGCATTGTTATCTAAGCCAGT
ATTCAGCTTCACTATATACCGCCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 743>:

GNMMG74TF gnm_743

30 GCCAACCTTTATCGTAACATATTCAAACGATAGTTCCCGAACTCTCGATATCCGAAC
TAAAAAGAAGAAGAGCAGAGTAAGAGGCAATAGAGGAACAAGTAAGAACAAAAATAGCA
AAATTTTCAACTTAGTTAACAATAGTTACCTCTCCTTTAAATTCAATCCTGAAAGGTACC
CCTTACCCGGGGCAACCAATTATAGTTCCCATATTTCAAATATGGTTTAACTACTT
TTTTCCCCCCCCAAGGGAATGCATTTTAAATCAGGCTTTTCAGGTGCAAACCGATACTT
35 ACCATTACCATCTTTAACCACAGATATATTCCAGGTATAGCCCAACGTGAAAAATCGGA
GTATTATATACAGTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 744>:

GNMMH29TR gnm_744

CGTATCGACATTTCCATTAATCTCGGATTCGCTCGCGGGACAGAGCAGTGACGATGGAGG
 AGCGAGCCAGATGCGCATCGTCGCCAACAGATCTGCAACAACCTGCGATCGACCAAACGCG
 ATTTGTCTCCGCCACGTCATACCGGCTGATCCAATTCGAAGAATACAGAGAGCATCATC
 5 CTCCACCATCCGCACGAGTATAAAGCTTGTGCTAAGGAAGGAACCATTTGGGAGGATATGT
 AACTACGGCGCTTAGGAGCCATTGAACCTGACGGTGAATAAATCGAGAGGAAGCTTATTA
 GTGTTTAGAAAGAGATGGTGAGGTTCCAATCTAACTCAATTGATGGGTAAATTTGTTGTT
 TCTATTCCGAAGAAA

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 745>:

GNMMH29TF gnm_745

CGCAAAGAACAGAAGTCATTGATGAGAACAGGTTTGTGCGGTGTTAAAAATAAACGAATTT
 TATGTAATAAATACTGGTATCTACATAGAGTATTATAAAACATGCGTGTGATTAATCTAC
 GTAGGTAAGCAGCAAATTCAGTCAAAAGAAGAAACATCATCGACCATCTCTAGTGAATTA
 15 CTGAAAACCTGAAGAAATTATCTCATCCCCGAGTCAAAGTGAACCGTGGACTGTACTTGCT
 CATAAGAAGCCTCAGAAGGACTGGAAAGCTTACAACCCAAAGACAATGAGACCTCCCCCT
 CTACCAGAGGGTACCAAATGTGTGAAAGTTATGACTTGGAATGTTAATGGACTGAGAGGA
 TTGTTGAAGTTTGAGAGCTTCTCTGCTCTGCAGCTTGCCCCAAGAGAAAATTTTGACATC
 TTGTGCTTGCAAGGAGACTAACTCCAGGTCATAACTTTAGACCCTTCTTAAGTTGTTTCT
 20 GCTCTATATTTTAAACACAGCCAATCTAGAAATCTTGTACTAAAGACATACGCAnACT
 TATGACAGGTGAAAGATGTTGAGGAAATTAAGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 746>:

GNMMH47TFB gnm_746

TTGCTGTTCAAGCTGTTTTTCAAGATTCTCGTAATATTCGTACATATAATAAGGGTCTTT
 GTACGGTTTGAATGCGGTCTGTTTCATGAATGGCTTGAGCTTTCAAAAGGGCGCAGTCGTA
 CGCTTCGGGAGCCAAAGACTTGGTCAGCTTGTGATGACTCTGCTCAATCAGTTCAAACAG
 TTTGGCTTTTGCCAATTCGGGAAAAATGAATTCAGACCGTTTGCCSCACGTCCGAACGTG
 TTTTTTACCCATTACAGTATCTGTCGGCTGAAATCGACTTATCTTCTCTTA

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 747>:

GNMNA66TR gnm_747

GGTAATGATGAATGATAGTTTTACAAAAGTTTCGGACTACAATTTATACGTTTATAATAA
 TAACAATATCCATCAAAAAAATGTGATTTTTCTTTTTTAAAGTTGCATCTTGCCATTCT
 35 TTGTAATCACATTCGTAATATTGAGCATTTCATCTGAATCAATAGATATTGAGGT
 AAAACATTCCCTTCCTTATCTAGTTCTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 748>:

GNMND11TR gnm_748

GGCGCGGGACCCATGCTTTGGATGCGGTACAGCCGTCGCGTTATGTTTTGGGGTTCGGAT
 ACGACCAGCTGAGGGGAAATGGGGCGCAAACATTATGCTGACCTATTCCAAAGGGAAAA
 40 ACCCTGACGAGCTTGCTTATCTGGCAGGCGATCAAAAACGATATTCGACAAAAAGAGCGT

CGTCTTCTTGGTCGACGGCAGACGTTTCCGCCTATCTGAATCTGAAAAACGGCTGACCT
TGAGGGCGGCTATCTACAATATCGGCAACTACCGCTACGTTACTTGGGAATCCTTGCGCC
AGACTGCGGAAAGCACGGCAAACCGGCACGGCGGCGACAGCAACTATGGAAGGTATGCCG
CACCGGGCAGGAACCTCAGTCTCGCGCTTCGAAACGGGACGTTGTCCGAGTGGAGCAT
5 ATGGACGGCATAATCGTTTAAACGGTTTGGnGAAAGTGTGAAACCAATACGTGCAAGG
TAnCAGCAAGCTGTCGCGTTCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 749>:

GNMNE46TF gnm_749

10 TATCTGAAAGTCCGAGATTCTACATTCCTCGGCTTTCGCGGGAATGACGAAAAGTGGTGGGA
ATGACGGTTCAGTTGCTACGGTACTGTGAGGTTTCGGTTATGTTGGAATTCAGGAAAC
TTATGAATCGTCATTCCCGCGCAGGCGGGAATCTGGTATTTCAATGCCTCAAGAATTTAT
CGGAACAAACCAAAACCTTCCGCCGTCTCCACGAAAGTGGGAATCTAGAAATGAAA
TGCAACATGAATTTATCGGAAATGACCGAAACTGAACGGACTGGATTCCCGCTTTGCGG
15 GAATGACGGGATTTTAGGTTTCTGATTTTGGTTTCTGTTTTGAGGGATGACGGGATG
TAGGTTTTCTTAAGCCTGCGTCCTAGATTCCCGCTTTGCGGGAATGACGGGATGTGGGT
TCGTGGGAATGACGTTGTGCAAGTTTCCGTGCGGATGGATTTCGTATTACGCGCACGCG
GGAATCCAGACCTTATTGCAACAGCATTATTCAAACATTATCTGA

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 750>:

GNMNE50TF gnm_750

CCCTGCAATAAAAAAGATTCCGTTTTTCAAATAATATTCGAAACTCTGGCGTTTTTTTCCA
CTGTGAAACTCCAATAGACTTTTTGCGGAAGACCGTCGCGATCATAGCCGACCACAAGA
CTGTTCGCCTTCATCCCTCGGGGCATCACTTCCCGCATACTCTGATAATCCACAGAATTG
25 CGCGAGTCCGACGCAGTTCGTTGCTCTCTTTGCGGAAGTCGAAACCTTCTGCTCGTCA
TTCGCGACATC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 751>:

GNMNE80TR gnm_751

30 CAGGTCAAAAACCTTATTGCGTCTGGCTTTCGAAATCATGCTCCAGCAAACGCAAGTCG
CCACCGTGTGGACTACTATCCGCGCTTCTTAGAAAAATCCCGACCGTTCAGACGCTTG
CCGCCGCGCGCAAGACGAAGTGTGTCGTTGTGGGCGGGCTTGGGCTATTACAGCCGCG
CGCGCAACCTGCACAAAGCCGCGCAACAAGTCGTGAGGCAATTGCGCGGCACGTTCCGT
CGGAGCGCAAAGACTTGGAAACCTCTGCGGCGTAGGCAGAAGCACCGCCGCCGCAATT
35 GCGCCTTCTCCTTCAACCGCGCGAAACCATTTTGACGGCAACGTCAAACGCCGGTAGC
GTCCAAGGCGTAGTCGTCCAAATGACGGCAAACGCTTTCGCTTCGAAACCAGCCAAACCG
AATGCGGCGCAAGCGCGGCGAGTGTCTTTAAACAGATAGGCAACGTCAATCGCGGGCGAG
ATTTTGTCTTTGTATTCCACTTCCGCTTCGGCCAGCGAAGAACCGCAGTCCAAGCAGAAT
TGAACCGGTTTCGCACCCCGGTAGAGATAGCCGGATTGTAGATTTCGCCGAGCATACGC
40 ACG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 752>:

GNMNK53TFC gnm_752

GTGACTCATAGAGGATCCACGAATCTAGACCTTAGAACAACAGCAATATTCAAAGATTG
GCGGATTGCGATTTGAAGTGCAACTTTCCCTAACAGAAAAAGGCCAGTATGCGGTAGCAT
ACGGCCTTTCTGCAAGAAAGATTGCCATGAGCTACACGCAACTGACCCAAGGCCGAACGA
5 TACCACATCCAATACCTGTCCCGCCACTGCACCGTCACCGAAATCGCCAAACAGCTGAAC
CGCCACAAAAGCACCATCAGCCGCGAAATCAGACGGCACCAGCCCAAGGCCAGCAATAC
AGCGCCGAAAAAGCCCAGCGGCAAGCCAGACTATCAAACAGCGTAAGCGACAACCCCTAT
AAGCTCGATTGCGAGCTGATTGAGCACATCGACCCCTTATCCGCGCAAACCTCAGTCCC
GAACAAGTATGCGCCTACCTGCGCAAACACCACCAGATCAGCTCCACCACAGCACCATT
10 TACCGTACCTTCGCCAAGACAAAAGCAACGGCAGCACGTTGTGGCAACATCTCAGAATA
TGCAGCAAACCTACCGCAAACGCTACGGCAGCACATGGACCAGAGGCAAAGTACCCAAC
CGTGTCCGCATAGAAAACCGACCCGCTATCGTCGACCAGAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 753>:

GNMNL81TF gnm_753

15 GCGGGAATGACGGCAAAGTGGCGGGAATGACAGATCGGGCATTCTTAAATTACCCGTGT
ATCGCTGTAAATCTTACAGATGGCGGCATATAGTGGATATCCGCAAATCGGCGCGGAAA
CAGGGGTAAACAAAATCCACCTCAACGTCCACGTCAACCACGACCGTGCCGACGCGCACC
GCCTGTATTTCAAAAACGGTTTTGAATCTGCGCATACCACTTCCGTTGCGACCCCAAAT
20 GAAAACCCCCCTCCCCATCTGCACCTGTGCGCACTCGCGCCTGCACCCCTTCCGGACA
AGGCGGCAGCAGGGTTTACGGCGAAATCAAAGCCCGAGACCTTTCGTTACCGCTCCTAT
CCTGCTTTCTGCTTTCTGCTTCTGCTCTCGTTGAGCCAAGCGTTCTTGCAAGCTCGC
TTGCACGTTGGCAAGCATTGCACTCTATCCGCTTTCTTTCTGTTGCGGCTGGTGGTTC
AGGCTCGCGTTGTACGCTTGCATAAAGCGCACCGTGAATCGATGCTCGCTATTATTTC
25 TATCAATATTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 754>:

GNMNN48TR gnm_754

30 TTGGGAAGTTGTCCGTGTGCGACACGTTTTGTGTCTGACCGTTATGTAGAAGGGCAAAAA
TGATAATGACCGCCCCGTTGCGTTTTGGAGAAGAGGGTAAAGGCAGAAAGCATATGCCGT
CTGAATGATATTTAGACGGCATTATATTTGCGGCGGCACTCAGTCCGTGTCGCTTTCA
GGCAACTCTGCCGAACCATGCGTTTGAGCACGATATTGGTTTTGTTGCGGAGCCGTTTG
CTTTTCGGATGGTGGCGTAGTAGAGCGGGGCGGGGACGCGCGCGTCAGTTTTGCCGCC
GTTCAAAAAGCCAATTCGGGCCACCCGGCGCGCCTATGGGTATGGCGGAAATGGCGGAA
35 ACATTGTGGACGAAATTCCTCAATCACAACCCCGCCAACCCCAAATTCTACAACCGCGAC
CGTTTCGCTCTCTCAACGGCCACGCGTCTATGCTGTTGTACAGCCTGCTGCACCTGACC
GGCTACAACCTAAGCATGAAGACTTGAAAACTTCGCCAACTGCACAGCAAACCCCC
GGCCATCCCGAATACGGCTACACCGACGGCGTGGAAACCACGACCGGCCGTTGGGGCAA
GGGATTGCCAACGCGGTGGGTATGGCATTTGGCAGAAAAAATCCTTGCCGCGCAATTTAAT
40 AAAGACGTTTGAACATCGTCGATCATTACACCTACGTCTTTATGGGCGACGGCTGTCTG
ATGGAAGGCGTATCGCACGAAGCCTGTTGCTCGCCGGCAACTTGGGCTTGGGCAAACTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 755>:

GNMNNQ41TR gnm_755

45 AAAAGCGGGAGCTCCACCGCGGTGGCGGCCGCTCTAGAACTAGTGGATCCCCCGGGCTGC

5 AGGAATTCGGCACGAGAAGGGACTTATTACATTGGTACAGACATATTTATGCTTTCTTCC
ATCACCAACCCTAAACCCCTTTGGAGGAATGAAATAACTGCATAAACTAGTCAACTGAA
CACTGGGCCACTTACCTCAATGTTATACAAAGTCCTGGATGATTTGATTCTGAACCACAG
CCTTTGCAGGAGTTGGGGGAATCAGATTTGCTCATGAAGACATCCCTTTCCACTTTTGTC
ATGGGCAGTAAATACTATAGTTTACAATGCCTACCAATTAGCAAAGGATCATTTCATTGAG
CTACTCAGTTCCTCTGTAAACAGGTCTATGTATGTGCAATTCAGCTAAGATC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 756>:

GNMNQ41TF gnm_756

10 TACGACTCACTATAGGGCGAATTGGGTACGGGGCCCCCCTCGAGTTTTTTTTTTTTTTT
TTTTTCTGTATTGAACTTTATTACAAAATTATAAAGCAGAGCTCTGTAACAAAATAAT
ACACATTTGGGTTTGCTTTAACCTCCAAGTAAGTCTGAGAAAATCTTAATAAAAGCCACT
TGAAGTAACAATTCACATCCAAGAGATTTCCACAAATTTATACAATGTATATTGAGCACT
15 AGTTCCTGTACAGCTTATTCTTATTAGTTTGGATCCAATTCCTCAATGTATTATGAACC
AGTCAGCTATCTGTCTTTTGAACAAGTCTTAAGTGAATCTCAGAGTAATCAGCAAAAG
CTACGGAATAATTCTAAGAATTAGATGTTTCCATATCATTAAACCAAGGATCCATGAGG
GGCAGAAGGGAGGATTCAAAGATTTAAAAAAATCAAATTTAGACCTTGGTTAAATATT
AACTGGAATGGGATCTTGGAACTCCAACCTTAATTTGGTGTAAATAAAATG

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 757>:

gnm_757

25 TGTTTCCCTCTTGACAACGGACGTTAGCACCCGCTGTCTGTCTCCCGAGGAACCACTTGA
TGGTATTCTTAGTTTGCCATGGGTTGGTAAGTTGCAATAACCCCTAGCCATAACAGTGC
TTTACCCCATCAGTGTCTTGCTCGAGGCACTACCTAAATAGTTTGGGGAGAACCAGCT
ATCTCCGAGTTTGTAGCTTTACCCCTATCCACAGCTCATCCCCGATTTTGCAACA
TGCGTGGGTTCCGTCCTCCAGTACCTGTTACGGCACCTTCAACCTGGCCATGGATAGATC
ACTCGGTTTTCGGGCTACACCCAGCAACTCATCGCCCTATTAGACTCGGTTTCCCTACG
CCTCCCCTATTCCGGTTAAGCTCGCT

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 758>:

GNMNR06TF gnm_758

35 GCTCGGCTCATGGAACGAAATACATCGTATCTGCACTCAAATATCGCCCCGATTCTTTT
GCCTCGATGGTCGGTCAGGAGGCATTGTCCGCTACACTCAAAGCTCCATCGTACAGCAA
AAGACAGCTCACGCCTATCTCTTTGTGGCCCGGTGGGGTGGGAAAGACCTCTTGTCGA
CGCATCTTCGCCCGTGCCATCAACTGTCTGGAGCGGTTGCCGGATGGAGAAGCTTGTGGG
CGATGCGAGTCGTGCAAGGCTTTTCGATGAGCAGCGATCCATGAATATATATGAAGTGGAT
GCCGCTTCGAACAATTCCGTTAGATGATATTCGTCTCTTGATAGAGCAGGCCAATGTGCCG
CCACAGATCGGGAAATACAAGGTCTACATCATCTACAAGGTACAAATGCTC

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 759>:

GNMNR07TF gnm_759

GAATCAATGGAGAAAGTTTGATCCGATGAGATAACGGTCGTCCAATCGAAAAGTCTGAGC
CTTTCATAAATTTTCATCTGTCGTCTTCGCATGGAAAGTTATTACAGGTTTCAATATGCGC

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AGTGCTGTACGCAACCGGAGATTAGCAAGATAGAGCATCCTCTTATCTCTCGAAACTG
ACCATACGCCGCGGACGGTTACCTCCTCAGCACCCAAGGCTGTTAGTTCGGCAGCCAAG
ACATCCTCCAACCATAAAGGGTCTTAGCTACCATAGTAAATTGGAGATCGTTATTCATA
ATAGTCCATGATTATGGAACAAAGATAATGAAATACGGCCGAGTTTATGGCTTTTGGAG
5 ACCTGTACGGAAGTGTGTAGATTCCAGCTATCAAGGCTCGCATTTCAGCCACTAACGTAC
ATCTAAAGCTCATGATGCTACGCTCGGTTATCAAACAAGTACGAATCCATATATCAGAGA
TTCAAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 760>:

10 GNMR12TF gnm_760

GTACTGCTTATAGAGATGGCTTCCTGTTTTCGTATAGCCCCTTGGATGGCAACGATACGG
TCTTTAATGCTTCTGCTTGGAGCGCTCTCTTGAGCTATTGCTACCATTATACCAAAG
ACGAAGCGTATCGCACGCTTGGCGGCCAAACGATCTCAGCTTGCTGTGCTGCACAAGCCG
AAGATGGTTCGTGGGTCTATGGGATGCTACCCGTGCAGTCATGGATTGATAGCTTCATA
15 CCGGCTACAATTTGGATGCACTGATTGCCTATCAAGAGCTAACGGnGGACATTTCTTTG
CCGAGAATATAGAGCGTGGGTTGTCGTATTACTTAGAGCATTTCCTCGAGGCAGATGGTA
TGCCCAAGTATTATCAGGATCGTACTTATCCAATCGACAATCATTGTCTGGTCAGCTCT
TCGTGTCGCTAGCTAGACTTCATCG

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 761>:

GNMR14TF gnm_761

GGAGCGGGCGCAGTTCCTCCCTGCGCTGGACGAAAATAGCATGAACAACCTCTCGGAAAA
CAGCCTGAACGAAGAGAGTCGATTGCTTTGGGACGGCTCTTCGGATTGGGCAGAGGCACT
GACCAAGAGGATCCGCCATCAGGATCGCTTCCCCTATCTGATGCTTCGTTTTATCGAGGA
25 GATGGATCTGCTCAAGGGTATACGCTTTCGTGTCGATTGTTGGGTGAAATCGAGCTGGATTC
TTACTCCAAAAAGGTAGGCCGGAATGGTGAGTACGATCGCACGATAACGGATCATGCCTT
GGCATTTCGGCAAGCTGTCAGACTTCAGAATGAAGAAGAGGTAAGTAATGATGATCAGTGG
AGAAGCGTCTTATCCCGTACGCTTCTCTCTTTGCTCCCCGCTATGCCATATACGACAA
TAAGATAGG

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 762>:

GNMR20TF gnm_762

GAAAATACAGCCTTTTCGTTTTTACCGGTCAAAATAAAATCTTCTGAATACTGTCCATA
ATCATATTTGTTAATGGTCAAATATAATGAAAGAATGTTTGAAAACCAATATGAACTGT
35 TGCATGGGAGTTTCATTGAGCTCTTTGCTGCAGAGCAGATTCTTAGTGTCTTCGGGAAA
GGTCAAACCTCCGGTATATGGGCACACCAAGCAACAGAAATTTCCCAAGTTTCCATTA
GAGAAGTACTCCTTCTCGTCAAATAGGCGAGAAATAAGAAACGATTGTCAGCTGATTC
TTGCTTCTGTCATGATGCAGGACGCGATTGTCAGCTGATTCTTGCTTCTGTCAGCATGCA
AGACGCGATTGTCAGTTGATTCTTGCTTCTGTCAGCATGCAAGACGCGATTGTCAGCTGA
40 TTCTTGCTTCTGTCAGCATGCAAGACGCGATTGTCAGCTGATTCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 763>:

gnm_763

ATTCCAGAGTACTTAACTACGGTTTTAAATGTACCTTTTATTTGGGTGGCACGTCTTTG
TTGATPCTAGTTGTTGTAACGATGGATTTTAGTACACAAATAAATTCGTATAGGCTTACT
CAACAGTATGATAAGTTAATGACTCGTTCAGAAATGAAATCATTCTCGGAAATAGAAT
5 TATGGCGAAAGAAGATACTATCCAAATGCAAGGTGAAATCTTGAACTTTACCTAATGC
AACATTAAAGTAAACTTGAGAATGACCATATTGTATTGGGTCAATTTCTGGGAAGAT
GCGGATGCATTACATTCGTATTTCTCCGGGAGATAAGGTCACAGTAGAGCTGACACCTTA
TGATCTAACTAGGGCTCGAATCGTTTTCAGAGCAAGATAAACCAATAAAAGGAAATAAA
ATGCGTGTACAACCATCTGTTAAGAAAATTTGCCGAAATTGCAAGATTATTCGTCGAAAT
10 CGTGTAGTTCGTGTAATTTGTACTGATCTCGGTCAAAACAGCGTCAAGGTTAATGGAAT
ATTTCTTGTAAATGTGATTCTGTGATATAGTGACACACTTTGCCCTAAAAAGGAAAAATA
TGGCTCGTATTGCAGGGGTAAATATCCCTAATAACGCACACATCGTAATTGGTCTTCAGG
CTATTTACGGTATTGGTGTACTCGTGTCTAAATTTGATTGTGAGGCTGCAATATTGCGC
CTGATACTAAAGCCCAACATCTTTTGAGCAACAGAGCCCGTTGATAGCCACAGCTGTGTA
15 TGGTTAAATTTCTGCCCAGAATCAGAAAGAAGAGCGTACATTTTGGAGAGCAGTCGACCT
CTAAGATTTTCAGGAAGACGTTTGTATTGTTTCGCAAAACTTCTAACAATGGACAC
TCCACATAATATGTCAACGTGTTCCCATTTGATTCAAATTAATAGGGTACAGTTTGA
GAATAGGCCCTATTTGAATAAAAAGTATGCTCCTTAGATTGGGATTGTGTGTCCCGG

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 764>:

GNMNS04TF gnm_764

ACACTGATGTTACCGGGCATCTTGCTCCAGTTATAGGTCTCACCGAATGTGCCTGAATAG
TGGGTATGCGTCCCGTCATATCATCGTAGTAGTCATATTCGCCGGAAGCCTTCTCCGGC
CACTTGTAGTGACGCATGATTTGTCCCATGGCAGTGGAACACAACCGGTATAAGCCTGC
25 TGCCCGGAAGGAAGCAGGGGATGCAAGGTGTTAAATGGATAGCCCTGATCCACAAGATC
GGATCCGATGCATGTTTCGCCGTTTCCAAAATAGGGGCAATGGATGATGGCAGGTCCCGT
GTAGGCTTGGCTTCACGGATAGGATCTATCGGCTCTGCCTTGCCGTCCATTACAGCAGGC
ATTCACGTTTCATAACCTTTGTGCCACCCTCTGATATTGTCCGGTATACGGGCCG

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 765>:

GNMNS06TF gnm_765

GAAAAGAGAGCTTCATGCGATCTCTCTGCAACCTCAAGTAATCTGAAAAACACTTAAGA
ATCAGCTCTGCGGCAAAAGACTTCAATGAAAGTCCTATAAAATAGTTGCAAATAGCTGAT
AGTTAGCGCATTGATGGGAGCAGAATCAGCTGACAATCGCGTCTGCATCGTGCAGGGAG
35 CAAGAATCAGCTGACAATCGCGTCTGCATCGTGCAGGGAGCAAGAATCAGCCGACAATC
GCGTCTGCATCGTGCAGGGAGCAAGAATCAGCTGACAATCGCGTCTGCATCGTGCAGG
GAGCAAGAATCAGCTGACAATCGCGTCTGCATCGTGCAGGGAGCAAGAATCAGCTGACA
ATCGCGTCTGCATCGTGCAGGAAGCAAGAATCAGCTGACAATCGCGTCTGTATCGTGC
AGGAAGCAAGAATCAGTTGACAATCGCGTCC

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 766>:

GNMNS08TF gnm_766

CACTTTCACTTATACATACCCCGTTAAATAAGTTAAGAGGGAAATATGAAAAGTGTAGTA
ACAAAGCAGGCCCTCATCGGCCTGCTTTTCTTTAGTATAAGTATATACTCCCATGCGGCC
45 AACCTCCGGCCCAACCTACCGACACCATCGTATCCGGCAATATCGCACTTGAGGATATA

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5 GTGGTGACCGGTAGCCGTACAGCCCGTCTGCTTAAAGATGTACCTGTCCCCACAAAGGTG
TTCAAGGCCAAAGATATCAAAGCTATAGCCCCATCTTCTTTCATTGACGTACTGCAGTAT
ATTCTTCCCGGGATCGAGTTTACCAAGCATGGTTCCAGAGATCAGCTCAATGCTCAGGGA
TTTGACGAAAGTTCTATTCTCTTCTCGATGGCGAATTGATTTCAACGGGATCTACC
AGTGGAAATAGACTTCGAACGAATCAATCCGGATGACATCGAGCGAATCGAAGTGCTTCGT
GGAGCTTCTCTGCTTTGTACGGATCTAATGCCATCGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 767>:

GNMNS13TF gmm_767

10 GAATGGAGCAAATGAAAAGCGATTCTCTGGCAATGTCCAATGCATCTCAATTTGGACG
AATGCAGGAATGAGTTACTTGTACCTGTTTAAAGTGCTGAGATACAAATGCAGGTTAAAG
AGCTGTTTGAATTATCCATGCAAAAGTCGACAGAGGGAATATCCCTCTACTCCTCTGCTG
AGAGCTATCTATTGGCGTGCTTAGGGATGCAAGACTTTGTAGCCAATATAGATGCTTACA
ACGTAAAGACACTCAAAGAGAGCTTCCTTGAAAGTGGACGCATTGATGCAGAGTATTATT
15 TGCCTAAGTATGAGGATTACATCAATGCAGTATCGGCATACACTGGCGGTGTCGCTCCTC
TTGGTGAGGTCTGCACCATTAAAGACAGCAACTATACGCCAGAATGTGATATGAAGTATC
GCTACATTGAGTTGGCTAATATTGGCAAGTCGGGCGACATTACAGGCTGTTTGTACGAAA
ATGGTGAAGACCTGCCACACGTGCAAGGCGTATCGTAACCCAAGGCGATGTTATTGTTT
CATCTATAGAGGGTCTTTGA

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 768>:

GNMNS15TF gmm_768

ATCGAGTGGTTGCAAGGTGGAATACACGTTTCGCCTCTGTTCCGAATGGATTGCAGGTTG
TCCCTGATGGTGTTTGGTTGCTGTTTCATGACGGGGTACGTCCTTTGGTCAGTGCTGAAA
25 CTATCGATGCCGTGTTTCGATCTTGCAAGTTGAAGGGGGCTGTCGCTCCTTGTCGCCCTA
TGACCGAATCGCTTCGCTATTATGCCACTGATGGCAATTATGCAGTGGACAGGAGTCGGT
ACGTCACGGTACAACTCCACAGACCTTTCGGAGCGAATGGCTTCGAGAGGCCTATCGGC
AACCCTATGAAGAGTATTTTACCGATGATTGTTCCGGTATATGAACACCATTTTGGCCGAC
CGGTGGCATTGATTGTCGGTAATATCGAAAATATCAAATTGACTACTCCTCTCGATCTAT
30 CCTTGCCAACTGTTATTGACATCCTAATACCTAAAAACATAAGTTACATCTCCACAT
TGTGGAAGAATACAAGACAACTTAATCGAAGACCTCGAAAAGGGCTAGGGCAACTAACG
CCATGCCAAGTTTTAGAACTAAGTACTACTCAA

35

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 769>:

GNMNS17TF gmm_769

GGCGTTTCATCATCTCATGTGCCCTCGATGTAAGCACAGTGTATATACCACCCTGCTTAT
TGCAAACCTCCCAGCTCGTCTCCAGCAAGAGGGAAGGGTTGGGGCGAAAATCATTCATTTC
GATCGCAATTCGTTTGGGAAAGTTTTTCCGGTCTTATCCTCCGACCAACCGCCATACAA
AGGCCACGGCTACGGTCACAACGAAACCTGTGGCAAGCGGAATCAAGGCTGCCAGCAGCG
40 TCCATTTCCGGCTCCCCGTCTCTTATATATGTTAAACAGGGTGCTGCAAGGATTGT
GGAGTAGGCAGAACAGCATGAGATTGATACCTGTGAGCATAGTCCAACCGCCGGCTTCGA
ACAGTCGTGCCGTTTCGGCTGTGCCATCGGCTTCGAACATGACGCCGGCACCAGGTTCTCTC
CATCTATTCCCGTAGTCAGGACAGTCAGCATCAGTATCGTCGGTATCACTATTTCATTGG
CCGGAATGGCCAATACATAGGCCAGCAGAATGACACCGTTGAGTCCCATCAGCCAACCGG
45 GTCCGTCCAGCAGGTGATCAGATATTCGGCTATCCCGACTCCACCGATTGATGTTGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 770>:

GNMNS19TF gnm_770

5 GACGGACGTATCATTTTCATAGCCCCCTGCTAACGGAGCAGGAAGACTTACCCACCGAT
TTTGAGAATACAGTCCCTGCCATCTTGGAGGACTGGCATCGTGATGCAGCACCCTCGCTG
GACTTGCGATATGTGTGCGGCAGCTGGCGAACTCCCGTTCTCCCCCTGTAGTACTGGTG
GACTTCGAACCCCTCCATGCACAGAAAGCAACGCTCTACTATGAGATGTGGGAGCACTTC
GGCATCCAAAGCGACAAGGGGTACGGCGACTATGACGAGGCCCTCGCTCTTCGGCATTGCC
10 GCAGCCCAAACGATGCATAGCCTGTGTGAATACCTCTGCCCCGAAGACCAACCGGCCATA
GGTATATTCAACGAATGGATGCTCGGCATGGGACTCCTCTACAGCAAGCGAAAACACCT
CGTCTGAAAACCCCTTTCTCACACATGCCACCACCACAGGGCGGTCTATCGCCGGCAAT
AACAAAGCTCTGTATGCCTACATGCCGGGTACAACGGCGATCAAATGGCTGCCGAACCTC
GGTGTAGAAGCCAAACACGGGATAGAAAAGCGGCGGCTACCAATCGGACACC

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 771>:

GNMNS23TF gnm_771

20 GACTTCACGGTTGTTTTCGAAGAAACGCCTAACGGAATAAATAAGGGCGGAGCAAGATTC
GGTCTTTCCACGGAAGCCAATGGCGCCAAACCTCAAAGTGTATGGATCGAGCGTACGGTA
GATTTGCCTGCAGGCACGAAGTATGTTGCTTTCCGTCACTACAATTGCTCGGATTTGAAC
TACATTCTTTTGATGATATTCAAGTTCACCATGGGTGGCAGCCCCACCCGACCGATTAT
ACCTACACGGTGTATCGTGATGGTACGAAGATCAAGGAAGGTTTGACCGAAACGACCTTC
GAAGAAGACGGCGTAGCTACGGGCAATCATGAGTATTGCGTGGAAGTGAAGTACACAGCC
GGCGTATCTCCGAAGAAATGTGTAAACGTAAGTGAATTGACACAGTTCAATCCTGTA
25 CAGAACCTGACGGCAGAACAGCTCCTAACAGCATGGATGCAATCCTTAATGGAATGCA
CCGGCATCTAACGTGCGGAAGTTCTGAACGAAGACTTCGAAAATGGTATTCTCTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 772>:

GNMNS25TF gnm_772

30 GGCCGATAGATTTCTGCGGATGAATAAGACCGAGTGCCTTTCGCGAATTTGCGGTAATGC
CCATTCCCAGAATTTACCGGCACCATTTCCGGCCATGTCACAGCGGCATCCATCGATTCC
TTTGCTTGCCCAAAGAGCAGAATATCTCGCATCCGAATCCACGTGTCCGGTAGAGGATC
GAAGTGTGCTTCTCCTCCATTACAGGTACAGATGCCGTACTTCAATTTACCGTTTCGTA
CCAATCCTCCTTATCGAT

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 773>:

GNMNS28TF gnm_773

40 GAGTAAGAACAACCGGTCGAGTAGCTGCTGCCCACTATCCGGGCGGCTAAAAAGCAGATC
GGTCAGTTTCATGCCCCAAAGTCTTCTCCGGTACGTAGTACTGCTTGGGTACCTCCCT
ATTCCAGAGGAGATCACGCGAATGATCTGTCAATAAGGGAGTGAGAAGAACTATTGAG
CAAGTCAAGAACAGCATCTGTCCGAAAATGAGGAACTTTTGAATAAGACGGATTTCTGC
CTGTACCCGTGATCCACTTCTCGACAAAAATGGAAATGGCACTTTGAGAGAGAGGGATAGC
CCATAGTCACATTGATACGTCTACAGTCTCGCCAGACTGTTCAATACGGGCATCAACA
TTCTGTATCGGGAAGAATGATAGCTGTTTCTATTCTTTGGTCAGAATAGCCTTCA

GGGTATAACTCCTCGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 774>:

GNMNS30TF gnm_774

5 CACTTTCAATACTCAATTCATTCTGGCCTGGCTGTTGATCTTTTGGGTATTGTCCTGTT
TGGACGGTTGGGGCTGCTGCTGTCCGCCCTGGTTATTGTTATTCGGATTGTTTTGCCGTT
GTTTTTGTGCGTGATTACTCTCCTTATTCTGATCCTGATTGTCTCCTCCTCCTTGCTGTT
GCTGTTTCTGAAGCAACTTCATGGTCAAAGCCAGATTGTAACGAGTCTCTTCATCGGTCG
GGTTGATTCCGAGCGAATGCTTATAGGCCCTCCACACTCTGCCGATAGTCTTTCTTTTCA
10 TAAAGGAGTTGCCGAGATTGTGCATCAGTTCGGCTCTACGCTTAGGTGTCAATGTCGGGT
CTTGTAAGAAGAGCAGCATAGTTTGGAGAGCTTCATCGGTGCGGCCTTGTGCATACTGTG
TACCGGCCAAACCGAATCGTGCTCGGTGAAAGTACTGTCTTGGAGAGAGCTTTGCGAT
ATGCGACCTCGGCATTGGCATATTGATGGCGTCGATATACT

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 775>:

GNMNS34TF gnm_775

GGGACTGCTTTCCGACTTGAAAAAGAAAGCAAAGAGGATGGCGATGACCAATGCATAAGC
TGCGAAAATATACCATACCGTGCTCCAAGCCGTATGACCGGCATCCGTAAAGCGATCTAC
CACCCAACCGCTGGCAAATCCGCCGATGATAGCTCCGATACCATTGGTCATTATCATAAA
20 AAGGCTTGAGCAGCTGCCGAATCGATGGTGTAGTCTCTCGATCGACAAACATGGAACC
GCTGATATTGAAGAAATCGAAGGCCATACCATATACGATCATCGACAGAACGAGGAAAAT
GAAGCCGCTACCCGGATTGCCGAGACCAAAGAAAGCGAAACGCAACCCCAAGCCAACAT
ACTCATAAGCATCACCCGTTTGATCCCGAAGCGCCCCATGAAAAACGGAATGGTCAAAAT
GAAAAGAGTCTCGGAAATCTGCGACAAAGAAAGCAACACATTGGGGTGCTGAACGGCAAA
25 GCTCTCGCTATAAGCATCCGCAAAATGAGACAAAAACGGATTGCCGAATGTATTGGTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 776>:

GNMNS37TF gnm_776

GTCTGCGGCAGGTATGCCAACAGGATTGCCCGCGGTTCTTTCTCCATAGACGGCAGATGC
30 TACAGCCTGCCGATCAACAATGGGCCGAATCTCTGCATGGCGGCATCAGCGGATTAAAT
ACGAAGGTCTGGGAGGTGAAATCCGCCGCCCTCTTCGCTTGCTGCTGGAATACGTGTCTG
GCAGATGGAGAGGAGGGGTATCCGGGCGAGCTGGTCTGTCGGATCATTTACAGCGTCACG
GATGAGGGCGCATTCACATAGACTATCGTGCTACTGCGGATGCTCCTACGGTTCTGAAT
CTGACCAATCACTCCTATTTCAATCTCTCGGGTGCAGGCGATCCCTCCGTGCATGATCAT
35 ACCCTCATGATACAAGCCCGGCATTATCTCCACAGACGATACGGCCATCCCTTACGGC
GAGCCTGCCGAGGTCCAGGGGACGCCGTTTCGATTTCCCTCAGCCCTCAGGCATAGGGGAT
CGGATCGACAGTGGATGGATCAGCTCATTGGGCAAAGGGATA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 777>:

GNMNS39TF gnm_777

CTCTCCTATCGTCAGTCCATGAAGAATAGGCAGCGGATCCACTCCGACAAACGAACGGCA
ATCATCTTGTAAGATGGGACCATCCAGTAGTCGTTCCGGTTTGGGCCGATCAGTAACGAT
CAGCTTTTTCTGCTCCTCGGCACAAGCCTCCATCACATAGTGCAGCGTACTGATATAAGT

AAAGAAGCGAGTCCCACATCCTGCATATCGAATAGCAGCACATCGACGTGGGCCAACAT
TCGAGGAGTAGGTTTCTTGTTTTGCGGTAGAGCGAAACGATAGGGATCCCGTCCTGAC
ATCCCGTTCATCCTTGACCGTTGCCCCGGCATCGGCATCTCCACGGCAGACGTGTTTCAGG
ACCTAGGATCTTGCAGACATTGCATCACTGCCGAGGCA

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 778>:

gnm_778

10

15

CCCCCGCTTTCTCTACATAAAATTACATTTTGCCGATATTTGCCGAATTGTCTGAAAAT
ATGTGTAATAAGGGGCGTATAATCAAAACATTTGCCCGGATTGCCATGCCATTATTTGCG
CCTGTTTGACGATGCCGTAAGCGGCCGCGCAAAACGCTATCAAAATCATGTGGAAAGCCG
TTTTTCCGTCCCGAAGAATCGATGCTTTGGACGGCGCGCTGCAATCGGGCTGGCAAAA
AGGGCTGCATTCCGTGTTGTTTGCAGACTACGGATTCCGTTTGCCGCTGACGGGGTTGA
GTCCGAACGCGCGGCAATCTTGCCCTGCACTGGTTTGCCAACGCGCCGACATCGATGC
CGAAAGCyGGCTTGCCCGACACTCAGATAGCCTCATGCGTGGGGCATCGACATGCATGAG
TTAAGCGTATCGTAGCGTTTCATCCTGAGCCAGGATCAAACCTCTCCACTGTCATATTGT
GTTTGTTTGCTTCTGTTTTCTCGCTCAGACGCCGATTATTACCCTTTGGATAATTCGAT
TTATCAGGTAGTACACCTCGGTTTCTTTTCTCTCTCGGTCTTTTCGTTTTCTCTTTG
ACAAAG

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 779>:

GNMNS42TF gnm_779

25

GCTGGTTCAGGCTCTCGCCATTGACCAATATTCCTCACTGCTGCCTCCCGTAGGAGTCT
GGTCCGTGCTCAGTACCAGTGTGGGGGATAAACCTCTCAGTTCCCTACCCATCGTCGC
CTTGGTGAGCCGTTACCTCACCAACAAGCTAATGGGACGCATGCCTATCTTACAGCTATA
AATATTTCTTGTAAATATCATGCAATAATATAAGTGATGCGGTTTTAGTCCGTCTTTCA
GCCGGTTATCCCCCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 780>:

GNMNS49TF gnm_780

30

35

GCCGACTGCCACGGTGCCGGCTGTGCGGTGACGATCGGCCGGGCCGAAGTCGGGATGCCA
GTCCGGCTTCGTGTATCTTCTCGCATGCCTTCGAACTCGCCTTTGCGGATCTTGCCAG
GTTTTACGGTGGGGAGCGGTAGCCGATTTCTCATAGAGGAATACGGGCACGCCGTACTT
CTCGCCTATCGTGGCCCTACCTCCTTGCGGAGGGTGTGCGGCTCTTCGGCAGTCACATT
CTTGATGGGGATAAAGGGGATCAGTCCACTGCGCCCATACGGnGGTGCTGACCCGTGTG
TTTGGTCAGGTCGATCAGCTCTACGGCTATGCCAACGGCTTCGAGCACTGCCTCCCGAAG
GGGCTCGGGTTCGCCCACTACGGTCACGACGAGACGGTTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 781>:

GNMNS51TF gnm_781

40

CCCTTCGTGAGGAAAAGACCGGTGGATTCCACTACGTATTCCACTCCGACTTGATCCCAT
TTCAGATCGGCAGGGTTCTTCTCAGCTGTAACGAAATGGCTTTCCCGTTTACTATCAGC
TGACCATCTTTGACTTCGACTGTCCATTGAAACGACCGGTGTACACTGTGCTACTTGAGC
ATGTACGCCATATATTCCACATCGATCAGGTCGTTGATGGCTACAATTTCAATGTGCTT

CTGTTTTGTGTTTGTGCTGCGCGGAATACCAAGCGGCCGATACGGCCAAAGCCGTTAATA
CCTACTTTTCGTCACTAAGTGCTTATATTTTAAATGTTAACCATTATTGTTTTGTCCGG
AATACTTTGCTTTTCCCCCGAAAAGGATCCGCAGAGATTCTTCCCGATAGACAGCGTTC
CAATGACCTTGCT

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 782>:

GNMNS53TF gnm_782

10

TAAATGGATGACCCGGCTTTTTGTTCGGTGGTTGATTTCTCATCGGTTTCAAACAAGA
AGAAAGAGTCCGACTCTCTATTTACTTGTATGGATTGAGAGAAAAATCAGAGAAGGCCTT
CGTCAGCGAAACTGAAATATGCCCCATCGTCACCGATGATCAGATGGTCGTTCACTCGAA
ATCCGAGCAATGTGGCAGCCTTTTGACCCTTTGAGTAAGCTGAATATCCTGTTCACTTG
GGCGTACCGTTCCTGAAGGATGATTGTGTGCCAGAATGATTGCCGAGGCAAGATGAGAGA
CGGCTTTGTGCATGATCAGACGGACATCGGnCGAAGTCTCCGATACACCTCCTCGGCTAA
AGGTTCTCATGCTG

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 783>:

GNMNS55TF gnm_783

20

GTACTTCGAAGAAGCATCCGGCGGCACGATCTTTCTGGACGAAGTGGGCGAACTGCCTTT
GCCACGCAGGCGAGGCTGCTGAGGGTGTGGAGACGGCGAGTTCATCCCGTAGGAGC
CAGCCAGTCGCAGAAGACGGATGTCCGTATCGTAGCGCGACGAATGTGAACCTCAAGGA
GGCGGTAGCGAACGGGAAGTTCCGGGAAGACCTCTTCTCCGGCTCAATACGGTACCGAT
CGAGGTGCCTGCGCTGCGTATGCGACCGGACGACGTGCCCTTGCTTTTTCGCCGATTGCG
CGCCGACAGCGCCGAGAAGTATCGGATGCCTCTGCTGCGCCTATCGGACGAAGCCGTACC
ATATTAATGCGTTACCGCTGGCCCCGCAATGTGCGACAGCTGC

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 784>:

GNMNS57TF gnm_784

30

GCCATTGTGGACGAACTCTACCGGCTTGCCGGTATCTATAATACCTGTATTATCTGTGTA
CTCCATTTTGTCCCGAACGGGATTAACTGCGTGGGCATATCGGTTCCGGAACCTCAGCGC
AAGTCGGCGGCCATCCTCTCCATAGAGAAAGATGAGAATCCGGCTTTGTGCGTCGTAAAA
GCACTTAAAGTAAGGGATGGAAGCCCGTTGGATGTACCTTTGATGCTGTTCCGATGGGAC
AGGGAAAAGGAATGCACGTTTACCGGGGAGAGAAATCTCCGGAAGACAnAGAAAAACGG
AACTTACGGAATTGGGACAAATCGCAnAAGAAGTCTTTCACGCnCAAGAGCATTTATCT
TACAACGAACTGGTCGAAAGAATCATGCAnACGGTCGACGTCAAAGACCGTACGGCCAAG
AGTTATATCAGTTATATGCGA

35

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 785>:

GNMNS59TF gnm_785

40

CGTGCAATATGTGTCGGAGAACGGCTTGCGTCATACCCCCGAACGATACAGCATTCTTGAA
GTCGCATATAATCTGAAGAAGATATTCACGCCGGACGACTTGTTGATCTCACTCGCGAG
AATGGCTTGCTGTAAGTCTTTCTACGGTCTATAATACCTTACCTTGCTCGAAGCGTGC
GGGATCGTTCTGCTTTGCTTCTCCCGAAACAAATATCAGTACTTGATGGCTTCATTT
GCAGAGCAGTGTCCGTGCTTTTCTGTACCGAATGTGCACAATTTTCTACCTACTACCGA

CGAAATGTGAAGTCGATACTGGCCGACAAGGATCTCAGACCACCACGCTTCTCTTATAGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 786>:

GNMNS63TF gnm_786

5 GCACACCTCCTGCGCGATAAGCCTTGATTATCGCCTGACGGATTTTTCCGGATCGAACG
ACTGCACATGACCATCACGCTTACGATGCGAAGGATTACCTCTTCCATTGTAATACGTT
ATTGTAATAAATACTTCTCTGAGATCTATTCTCTTAGTGCCGGGAGACTCCTTTCCTCG
AGGTCTTCTCTCCATACTTTATAGGCAACTCGTAGAGGCAGGTATTCTGGCTTACTTCAT
CTCTTTTCTGTTGTGCGGCCTTCCCATTACGCTCCACCTCTAATAGTGGAGAATGAACA
10 GTGGCATCATTTGGAAAGCGACAAGAGTCCGCATGTCAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 787>:

GNMNS65TF gnm_787

GTAGGCAGGGGGATCCCCCTCAAATCCCAAAAGTCTTGATTGGAGCGACTCAGCTCTCA
15 TACTAAAAAATCCCCCTCTAAGCAAACATTTAGGACACTATTGATTGATAGCGGTTTT
TCTATACAAACGATGATCCCGGCCCCCTGCTTGAACTGAATTTTGACACACCCTCTTCT
GGTAGTTGGGGTTAATTTAGGCCTTGCGTTTTTTCTGCGGAAAGGTTGCCGTCTTTAAC
CATAAAGAGATGAGACTTTATTGAAAGAGCATATCGGACGAGATCGGCTTGAACTTTTCT
TCTCCCTTGAGCCGTATCATTACCCTGCTGTAGTTCCAATAAGTAnGCCAGCCACCTTGT
20 ATGGCTCCGACCCAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 788>:

GNMNS71TF gnm_788

GTATGGTTTGAGTGACTACGAGGTTGAGGAGTGCATCAACGACTCCTTGCTTTTCAGTGA
25 ATTCCTTGCGTTGGACCTCGGCTTCCCTTCCCCGACCATAGCACGATCAGTCGTTTCCG
TAGTGAACCTCACTCGCTTGGGGATTATGGATAAACTCCTTCGGGAGCTGAACAAGCAGTT
CAAGAAGCACGGCATCAGCCGTATCGATCAAGGCGCCATCGTTGATGCGAGCATTGTGGA
TAGTCCTTACGCCCCCTGATGGCAACGTGGTCATAGAAGTGGCTGAAGATCGAGAGGATAC
TCGTTCCGGAGGAAGCTCGTACACAGCCAGGAGGCTTATCATTGTGAACCTAAGAGTGGCA
30 AACCGGGAGTAGACTCGGAGGCTCGTTGGGTACGCAAAGGCAGGCACTATCGGTATGGAT
ACAAGAAGCACGTCTTGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 789>:

GNMNS73TF gnm_789

GTTTTGGAATATAATATCGAAGTTCCGGACAGAATAGTCCGTTTTACCTTCTGTATCGG
35 CATAGCATCCATCTCTCTACCCGATCGATACGTACATCGAGGTACTGCAAGAGTAGCAA
ATTGCTGAATACTTCACATTATGGGATTATATGCTCGATCCGATAAGCAGAAAGACTAA
ATAAGTGAATAGATCAATTGTTCTTCTGACAAGAGATAAGCTCCCATTATGATTACAGA
GGCAAGTCCCAGTTTGAGGATTATATGTGAAG
40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 790>:

GNMNS77TF gnm_790

GCTCACAGCTCTATGAGATGGAGCTACAGCGCCGACGAGCTGCAGAGGCCAAAGTGGAGG
CCGGCAAGAAAAAGATAGAGTGGGGATCGCAGATTCCGAGCTATGTATTCGATGATCGCC
GTGTGAAAGACCATCGTACCAACTATCAGACGAGCAATGTCAATGCCGTTATGGATGGCG
5 ACATAGATGAATTTATCAAGGCTTATCTGATGGAATTTGCCGGTGAAGAGGCGTAATCGA
CTTTCGCTTCTGAAGGAAGGGATTTCGTTGATCAAAGGAAATGGGGCAGGCTTGTATTGGC
AGTCGGCCCATTTCTTTTTTGTGGGAAGTCCGGAAATGTCGCCGGTTTATCGGCTCATAT
ACAATTATACGCAGGGTTATTGTATCTCATGTCCTTTCGGGTAGTAGGCACTATATTCCT
GCTACAGGACGGnGAAATAGCCGACTTT

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 791>:

GNMNS79TF gnm_791

CTCTTCGATTAGATACGGTTTGTATGCTTCTCGATAAGGAATTGCTTGACTTTGCCTAC
TCTCTTCCCTTCGAATACCGCTACGGAAAGCGTATCTATGATGATATTTGTCGTGAAGT
15 TATGGCGAGAAAGGCATTTCTTTTTCGGACGATTTGAACCTGCATGGCATTATCTCTTCT
CCTGTTTACCGACTCAAACGATCTCTAAAGCCTTTGCTTCGACCATTATACCCCGTCCT
TCGATTTGAAAGGCGATATTATCGGTTTTGAACGGATCATGCAACCTGTATTACGACAG
GTAGAGCAAGACGGACGTTTCCACCCGACATCTATAAATGGGTATCCTTCTGCTGGTAT
CTGCTTCAAACGAnAAATTGATTGACCGCC

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 792>:

GNMNS83TF gnm_792

GCCAAGTTCTTCAGCAGGTCAATGCCTTCGGCAAACCATGACGGGGCATTGAACAAACTG
AAAGGCTTGATCGTGTAAAGAAATGTCATCGAGTACGGGAACGACTACGCCTGCCACCTTC
25 TTTGCCGAGAGCTTGACACCCTCCACACTGATCAGGTTCGGGTTTGAATTCGTTCCACAGG
CTTACCATGCTTCGGTAGCCTACGATCTCTTCTCCAGTTGGCGTTCCAATCGCTCCACC
TCGTCCCTTCGTTTCGCTTACCTCCAGACGCAATGCGCTCTCCTTGCTTTTGATCGTCGGT
AAGGTACGCTCTCGCATCTTAAGCTGCTTT

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 793>:

GNMNS87TF gnm_793

GCTTATGGCAATGCTGCCCAAGGAATCATCGACTTGGCCGAACAGGCAAGTGCTAAGATC
GTCGGTATGGGCTTTATCATAGAGAAAGCCTTTCAGAACGGGAGAGAGGCTCTACAGGAA
AGAGGTATAAGAGTGGAGTCGCTCGCGATCATCCGAAGCCTTGACAACCTGCTGCATAACT
35 ATTGCAGACGAAAACGAAGACTAACCATAACACCATTCGAATACACATCCCGTCCGCTGGC
TCAGTGGGCGGGATGTTGCTTTTTCTTCCCTTTTCTCCGAATATAAAGACGTGCCACTT
TTCGTTTCTCATTCCGAAGGCATATTGAGCCCTTTGAAAAAGAGAAGGTCTCTATAATG
CAAGAATCCGAGTACGTGCTACAGATATGGCCGAGCGGCAGTTAGAGACTGTCTCCTCT
GTCCTCAAGATAATAAGTGCCACGCAGGATTCGCGTTTAAACGGGAGG

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 794>:

GNMNS89TF gnm_794

5 CCACTTTTTCCGTAAGGACAGTATCGTACGTTTCCACCGCTCGGCTTTCGGCCTGTCCCT
GCCGGTGATCGGCGGCATAACGGCTATAGGGGTAGCACCTTTCGCCATGCACCTTACGG
GCAGTCTGGTCAATATCATCATGAATCGTTCTTTCGTATCCTACGGCGAGACAGCAGATG
CTACCGACTTGGCCATCGGAGCATTCGGGATTATCAATGGCTATGCCATGCTCTTTTCA
TGATTATCATCGGTGTGGCTCAGGGGATGCAGCCGATCGTAGGTTTCAACTACGGnGCTA
AAAATCCGGGACGGGTGAAGTCGGCCTATCGCTACAGTTGTGGCGTCAATCTACTGGTCA
GCTTTCTCGGTTT

10 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 795>:

GNMNS91TF gnm_795

15 GCAGATGGCGAACGGATTGTCAGCTTGTTATCGCCAGACATGAACAGGCCGAATGGGTG
CTTACAGACGAATTGGCCGATACGGAACGAGGTGCAGGCGGATTGGTGCATACGGGCAAA
GAATAATTTTCAATCTCCCTTCAACTACACAGATGCGGATCCATTCTATCATTCTCCTG
CTGTTCTTTTAGTTATTTCTCCTGTAGCCGGAAGTATATCCATTACAGACAGTACAGCA
CTAAGTTTCGACCGATATTTCTATGAAGGTGTCCGGCAGCGAGAACAGGAGAATTATGCT
GCAGCTTTCGACATCTTCGCTATTGCCATCGGTTGAATCCCAACGATGCGGCTCTGTTA
TCGGAGTTGGGAAAACGTATATTGCCAATGGGCGTCAGGAGGAAGGAACCCGGTA

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 796>:

GNMNY45TR gnm_796

25 CGATTATGAGCGCTGTGCGTACGCCTACGCGCCAGCTCTCAAGCCGCCGACAATTGAAT
GCGACGATAGTTGGATTCCATCAATGCCACTACCAGCGCGATTGTGAAATACGTTTCCC
AGCGTGCGGGCATCGGCATCAATGCCGACGTATCCGCGGTTTGGACAGCGAAATCCGGG
GCGGCGAAGCGCGGCATACCGGCTGCATTCCCTTCTTTAAATGTTTCAGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 797>:

GNMNY56TF gnm_797

30 GTCCGCTGATCGAGAACGCGCATGAAAACGGTAGTCTGGATTGTCGTCCTGTTTGCCGCC
GCCGTCGGACTGGCGCTGGCTTCGGGCATTTACACCGGCGACGTATATCCTACTCGGA
CAGACCATGCTCAGAATCAACCTGCACGCCTTTGTGTTAGGTTGCTGATTGCCGTCGTG
GTGTGGTATTTCTGTTTAGATTCAATTATCCGCGTATTCAATATCCCCGAAAAGATGCAG
CGTTTCGGTTCGGCGCGTAAAGGACGCAAGGCCGCCCTTGCCTTGAACAATGCGGGTTTG
GCGTATTTTGAATGGCGTTTTGAAAAAG

35

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 798>:

GNMNZ15TF gnm_798

40 CGCGACTGTTGCGATAAGCGCGGAGGCGATGATTTTTTTCATGTGTGTCCTGTTTGGGTG
GAAAATCGGTTTTATTTGTATCGCCGTCGGGAATTTTGGCAAGCATTCTGCCGGCAAATCG
TGATGTTTACAGGGGCGAGGTGTGCAATTTGCGGACAAATGCGAGGCTGTTGGCGACTGG
GTTGCCCTTGTTCGACTTCGTGTTTCGGTTTCTACGGTCAGCAGGCGGCGGTTTTTGTG
TTTGTTCAGGCTCAATTCCGCTTGTGCGGGTGTGAAAAACAGGCGGTGTTTTTCGGCAAA

-850-

5 GCGGCGGGCGGGCTGTTGGCGGTTTCAAAATCTGAAGCAGCGATCGTCCAGATGGAAG
CGTCGCACGCCCAATACGAGAATCCGTGCGGCAAAAAATCGGCGGCATCGGTAAACTCG
GCGGGGCTGCTGCGGCTGAAGTCGTGCCGTTTCGGCGGCTATCAAGGCGGCAACGGTGCGG
ATTTGCGGAATCATCGATTGCTGATAAGTGTGTCGTCCCGCCCTGCATCGAGAAGCATG
GGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 799>:

GNMOB22TRB gnm_799

10 ACTTCTTAAGGTCAAACATCTACTACTGATTGACAGCGAATTAGCATTGCGAGGGAAAGG
TGAAAAGAATTTGGGAGGGGAGCGAAATAGAATTCGAAATTCGACGTACATAAATAGCG
GGAGTGTTCAGCGGCGGATCGTGCAATCCCCGCACAACGGGCTAATGATCCATACCTA
GCAGTGAGTCCAATTGAACAGGGGAGGTGCAGGGAAATTGAGCTCCAACAGGGTGACGAG
CCGTGCGGCGCAGATTTGAAATTGAGCGACTCACTTACGGTTAGGCCGAAGGCGTTGCAA
15 TAGGCATCGGAGGATTGAATTTATGTACGCCGTAAACGTGGGGACGAGTCGCGGACAGG
GGCGAAAGGTCAAATAAATCTGGAGACAGTCGGCCTCTTTGAAAATCAGGAGGACAGG
TTCTGAGTAAGATATCGACGGGGGCAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 800>:

GNMOB25TE220 gnm_800

20 ATTACTGCCCAAGTGGAAAGTGGGCAAAGTGTACGAAGGCACTGTGGTGCAAATCCTCGA
TAACAAATGTCGGCGCGATTGTGTCAGCGTGATGCCGGGCAAAGACGGTTTGGTACACATCAG
CCAAATCGCCACGAGCGCGTACGCAATGTCGGCGACTACCTGCAAGTCGGTCAGGTGGT
GAACGTGAAAGCATTGGAAAGTGGACGACAGAGGCCGTGTCCGTCTGTCCATCAAAGCCCT
GCTGGACGCGCCTGCCCGTGAGGAAAATGCCGCCGAATAACGCTTAAGGTGAAAGTGCCG
25 TCTGAACAGGTTTACAGACGGTATTTTTACGGGTATCGGGAATGAATGGGGCTTACAGCC
ACAGGACGGCAAGTTCCATAATGCCCGGGGATCCTCTAGAGTCGACCTGCAAGCATG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 801>:

GNMOD17TRB gnm_801

30 AGGTGTACACGGTTCCCGCCATTAGTACTATGTGGTCGTGGTTCCGGCCCCGAATGACA
TCCTGTTGACGATAAACCTGCTGGTCCGGCACCCTGTGGTAATTCGTGTGCACCCTAGAT
TGATAAAGTTGACCCGTGGATCGGCAAATATTATGTTGACGGCGTCGTGTTGTAAATTGT
TGTGACACCTGGGCGAGTGGTTTGTCCTACTGTTGGTAACCTCCGTTCCGGCTGGAGTCCT
ACGTAGTAGAGGTAGCCGGCCGGATGTACTGTTTCGTGACGAAGACACGTGGAACATCGGC
35 TCGTACGGCTAGTGGGCTGGTAATAGGCATGTTGTGTGTACTCCCCCTGACACCGACACC
CCTTAAATTGACACCGCTAATGCCTGGATGGTGGTTTATGGTCGTTAGTACACACCTGGT
AATAACATGTTCCCCCTGTACTTCGTCTTTAACGGATCCTCATACCGTTGCTCGTACT
GAGCCCGATTCTGGCCCCAGTACTTAGACGTAGCCCTAACCTCCTGTTGAATATGGTGCC
TGTTCTGCTCGAAATGATGGGGCTGGAAACGTTGTTGACGACCTTGTTTAAATTGAAAC
40 CCTAATCCCTATGTTTAAATGGCGTAACGTTGATTTAAGCCTAAATTGACAATATTTGG
TTTGAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 802>:

GNMOD53TFB gnm_802

GGTAACGCCTAAAGGCGAAACCCAACTGGACGCCGTGAAGAAAACTCTGCGCGCCATC
TTCGGTGAAAAAGCATCTGACGTAAAAGATACTTCATTGCGTATGCCACCGGCATGAGC
GGTACCGTTATCGACGTTCAAGTCTTCACTCGTGAAGGTATTCAACGCGACAAACGTGCT
5 CAATCCGCCCCGGATGGGATTTGATGCGTTGCGGGGAATTGATGGGGCCGGGACGAGGAC
GTTGGCGCGCAGGTTGCCGAAGCGTTCCTTCGTCGGCGGCGACTTTCACAGGTAGTT
CAACGCGGCTTTGGACGCGCCGAAGCCGCCAGTAGGCTTTGGGTGTTTCGCGGTGGCT
TTCGCGGACGAAGATGACGGACGCGTCGGGCGACTGCTTCAGCAGCGGGAACAGGGCGCG
GGTCAGCCCCATAGGTGCGACGGTGTGATGCGGTATTGGGTGACCCATTGCGCGACGGT
10 TTGGAAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 803>:

GNMOE03TRB gnm_803

GTTCCCTTGTAGGTGCAACCGAACCTATAAATTGTTGAATATCGTTGATGGATGTGT
15 GATTAGTACTAGGAATGTTGTAACGTGTAAGGTCCTTGTTGTTTCGCTTAATATGCCGGT
AGGAGAAATTAGTAGTAAAGGTACCTTTAAATGCGTGGATAAAGCGGCTGAAATTATGTC
TAGAAATAATAGCGTGTATTTGGTAGGAATAGATCGTTTACTTAACCTATGTCAATGAC
CTCTTTCCAAAACCTACGAACCAAACTGAAAGATCGCAATATGGCACCCCTCCCCTAT
GAAATCCCATCCTATGCTTGTTATAGTGCTAGATGGTACCCCTTCGCCCTACGTTGTTT
20 GAAATTGTTTAACTTGTGCTCTTCACACAACGCTGGATCCCGTGTGTACCTAGGAC
CTCCCAACGGTACCCGTCTATCACCATTTCGTTGGATGATACTATTGTGCCCCGGAT
GACGCCGTTTCGACGATTAAAGTTGTTGTAAGAAAATTGTTGGTGCGGCTGGTGATGAC
CCGTATTTAACGTTAATTGGGCCATGGGTGCACTGGTAGAATGTGAGCCGTGA

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 804>:

GNMOG34TF gnm_804

CGCGCCGAAGAAATTCGCCGGGGCCGCGGATGTTGAGGTCTTGCGGGCGATTTCAAAGC
CGTCGGTGTGTTCTAGATGACTTTTCAGCCGCGCTTTGGCGAGTTCCGCCAAGGGTCGCC
GCCATTTCGACGGGGTGGTGTCCGTAGTCGTCCACCAAGAGCGCGGTCCCGCCGTTTGGC
30 AACTTGATGTCGCCGTATTTTGAAGCGGCGGCGACGCTTCAAAGCCGAGCAAGCCT
TTTTGGATCGCTTCAACCGATGCGCCGACTTCCAGCGCCACGCCGATGGCTGCCAATGCG
TTCAGCACGTTGTGTCTGCCGGGCATATTCAGCACGACTTCAAACGACCCCTGCTCATGT
CCTTTCAATTTGAACATGGACGGTGAATTTCAATTTGCGCGCCGACGTTTTCGATGTCGGTG
GCGTAGATGTCGGCGGTATCGTCCAAACCGTAAGTAGCATAAGGTTTGTCACTTTGGGC
35 AAAATCGCGCGGACGTGTTGCTGTCAATACAAAAAGGCTTTGCCGTAGAAGGGCATA
CGGTGGATGAAATCGATAAACCCCTGATGCAGTTTTTCGACGCTGTGCCCGTAGGTATCC
ATATGGTCTTCGTGATATTGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 805>:

GNMOG50TR gnm_805

TTTGACGGTTTCATTATGGCGCAGCAGCTTCCCGAGCCGCTGGCTTCGCAGTTTGCCGCG
ATGAATCGGGGCGACGTTACCCGCGGGGCTGATTGAAAACGGCGCGGATGCTGTCTAAAC
AAAATCTCCGTCTGAACAAAAATCCCATCGGATAAAAAATGCCGTCTGAAACGTTTCGGG
TTTCAGACGGCATTGTCGCGGGTACGCGCGGTGCGGCTTATTTCACTTTACCTTTCAA
45 CGCGCCATATCCTGCCCGTCCATTTGTTCCAGCGGGATGAATTTCAAGCTCACGCCGTT

GATGCAGTACAGCAGTCCGCCCTTTGTACGCGGGCCGTCTGGGAAGACATGTCCCAAATG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 806>:

GNMOH10TR gnm_806

5 CCCGTACAGCCCGTCAAAATCCGTGCGGTTGTTGTCGGGCAGTAACACGCAGAGAGACGT
TCAGACGGCGTCGCCCGTTTCCCAAAAAACGCCGTTTAAAGTAAAAAAATATTTTAAAC
AGACAGTTGATATTGACAAATTCAAACCGAAGATTTTAAATGCTGCCAACCCTCAATCCAA
ACCAACCGACAACTTTGGGCGTGGATGCCGGCATCCCCGTATTGCCCCTGCTGCCCGGC
10 AGACGCGTCAGCGAGATCGACTATATGGCGCCGTTGTTTTTCAGACGGCATTATTGTTG
TTGGAACGCTATCCCGCCGCACTCTTCTGCTGCCTGCCGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 807>:

GNMOH12TF gnm_807

15 CACTTTTATATAAATCATTGATCCCATTACCCCAACCTCCAATTTTTTGCACCATCTA
TTGTATATTCAACACCTAACTTTGTTACATCCATTATCACAGATTGTAAAAAGTAAAT
GCTTCTCTTTAAAGATCCATCAAATCCTTTATCTAAAGCAGATATTAAGTCTTTCCAT
TATCCCTTTGCTACCGTTCCGATTATTTACTGCTTGCTCCGCTAAAAACGTCGTATT
TAATATTGGAGTGATTTGACACATGGCACGTTATATTGGTCCTAAA

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 808>:

GNMOI35TF gnm_808

15 GAGTTTGGCTGTAAGTGGTTTACCATTATGGCGGCACGCTAAACATTTGCCGAAAATA
CGGTCTGAACCGCTGTAACAAGCAACATACTTCCAATTATTTAGATACGCGCATATCAA
CCTCTCTTTATCGTTCATCTTCAAAAAAGGGAAAGTTTTTCAATAGCACTTCAATCAATC
25 CTTCAATCCCCGGCCAAAAATTGGACGGTAATTTCCACCCACCCCTACTTTGATTTCAG
AAATATCTTTAACTTCCGCTTAAAGGCGGACACTTTGTCCATATCGTCATCAATTCCT
GTTTCCGAACGGTATTTTCCGCTTTTCCAAAACCTCGTCATAATAACAAGATAnATTAA
GCAATAGCCCCCAAGCACTATTGCAATTACGACTAATCTATGTTTTTCCCTAGTTAAGT
AATCTGCnACGCTATCATAGATTGCCCT

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 809>:

GNMOK36TR gnm_809

35 CCTTGAAATGAAGTATCTCTTATAAACTATCTTGGTAGCTCTATAGTGTTTCGTGACC
CAGTGGAGCTCCAAGCATCTGTGGAAGGTAATTCTTCACAGACACTGTGGGATTTTCAT
TGCTGCTTTTGGGTTGTGACTCAGCTCCTTCGGTAAATATAGCCATTACATACTTTCTC
CAAGAGCTGAATTATAGTAATTCAATTTTTAACTCACAAACATTTGTACAGAAATT
AACCCAAAGGCTTTAAATTATATCATTTCTTGATAGATCACTTATATTTCTATTTCTTG
ATTTCTTACTGGATTTTAAAAATAGTCCCCTTTGGTCTTTCACATGATCTTATTTAAGCC
40 CCTTCCCTAGTGTGACTTTCTTTACAATAAAGTTATTGGGAAAACTCATTAAATTCAT
TGACAGAAAGTATTGAATCCTGGGTGTTTGAACAGATATACAACACGCTGAAGCTGAAT
TGCGCCGTGTATCCTGCTGTGGACAAATCCTGCCGCGCTCGCGGACAAACCGTATTCC
TACGACAGCAGCGACCGTTTCCACTACCGCAACAGCACAATGTTTGAATGCCTCGTTT
GAGAAATCGTGAAAAACAAATGGACGAAACACCATCTGACTTTGGGCTTCGGTTACGAT

GCTTCCAAAGCGATTTCGCCGCCGAACAGCTTTCCACAAATGCCGCAAGGATTTCCGAA
TCCACGGGATTTCGATGAAAACAATCAAGATAAGTATCTTTGGGTAAGCCCGAAGTCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 810>:

5 **GNMOL05TRC gnm_810**

CCCCAATCGACCGACCCAAACAAATCACCCCTGATGTAAGCCGTAGTAACCTCGTTGT
ACGCCGTTGTGCTGCACTGGCAACGATCCTCTTGTTAATACATGGGTAATTCTCCTGAC
TTGCCGGACCCTACTTAACACATCGACCCTGTGATGGCCCGTCTCTTCTGTGCGGTCC
10 GTGTATTTGTTAGCGGCCCTCTTGTAAAGACGTGATCCGGGGAAGCGGGCAACCGTAAG
TATTCGACGCCCTCGTTTAATGTATGCAACGTTCCGTTGATTACCCTAGTTATCTTTT
CTTAACATTGGCACTGATTCTACTAAAACTAAGCGGGAATCCGGGCACACCGGTCGGT
AATAATTGCAAGGTAAGGTGACATGTGTTAACCTGTTGTTGGAGGTAATCCACCTAG
TAGATGGGGTGGACCGTTCCGCCGGTGGTAATCCGAAACCGAATTCGTCTAAATTGCG
CGTTGCTGGTGATGAAGGTAATAGGATGACGCTCAAATGTGTGTTCCCTACGGTAAGG

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 811>:

GNMOL83TR gnm_811

CTTCGCCGCCCGCTCCGAACACGAAAGGTCTCCGCCTTTCAAACGCACCACGCGCCTGC
20 CTTCGCGGGCCAGCCTGACCATAAGCGCATTGGTGTCTCTTGCGGGGTGCGCTCGCCCC
GGGCGCGCTTGCCGACAAAATCCGTTCCGCATCGCGGCGGACGAGGGACAGTATGCCGT
CTGAAACCAGCGCTCGTAAAGCACACGCTCTGCCTGCTGGATTTCCTGCAGCCCTTTGA
GCGTCAGCAGCCCCGCATCGCGGGACCCGCGCCGACCAGCGAGACGGAGCCGCTTGAT
CATTTTGACGACTTTGTTCCAATTGGCCTGCCAATTCCTGCAAGGGTGTGTTGCC
25 GGTTTTTGACGAnGGCGGCGAAACGTCGTTAACTGCTTTCCAAAAGCGGCGCGTT
CGGTAACGGATTTCAGTTTGCCCTTGACGGCATCGCGCCACCTTCTGAAATTCCGCCA
TATCGCCCAAAGACGGCGCAGAGGGCTTTCAGCCTTTCACGCAGCAGTCGGGCGATGA
CGGGCGCCGCCGAACATTACCTGCCTCTACATCCGTACGGCGGAAGCACTGGGCTTGGA
CACGCCGTCTGTGCGCCCGCGCCGATCGGAGAC

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 812>:

GNMOM42TF gnm_812

GTCCCCCTGGAGGGGGGCGGGCTCTTCGTTGCGGCGGAGGTTGTGGTCTTCTTCGGGCTG
CGCCTGTTTTTTGCGGAGCGCTGCGGCCGGCCGCGCCGTTTTTCTTCGGCTTGCGCCTT
TTTTGCGTTTCTGGGTTTGCTTCGGCGGGCTGCCTTTCGGGTCCGGGCTTCGCGTTG
35 CGGTTTTTGCGGTTTCGTCCTGGCGGGCGGAGGGTTCGCTGTCCGGCGTTTTTTGGGTCTT
GCGCGCTGCTTGGGTTTCGGGTTGnGTGCGCTCGGTGTTGGTGGGCGCGGTTTTTTGGAA
GGTGTGCGCGTGCAGCGCTGCGGTGCGGCGCGGCGGTCGGGGCCGCGCAACGCGCG
GGTCAACGGGTCGTGGTAAGGCTCCTTCGGGTGTTGCCGGAAGTGCCGTC

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 813>:

GNMOM51TF gnm_813

ATCAAATAATTGATTTTATTAGAATCTATTTGCAAAGCCATTGCCGTTACACAAGAATG
GCACATnTCnATAACTGATGAGGATTTATACCGATGAAGACAGACATTCAAACCGAATTA

ACCCATGCCCTACTACCACACGGATTATCTGTGGGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 814>:

GNMOM81TF gnm_814

5 CGTGTCGCGCTTTTCGCCCCGACGATTTGCCGCTCAACCAAAAATGGTCGTGGGACAAAAT
CCTGCGTTTCGCCCTTTATCAAACAGGCGGACGTATTGCAAGGCATCTACTTCTTCAGCGA
CCGTTTCAATATCGACGAAAAACGCCGCAACTTCGACTTCTACGAACCGATGACCGTGCA
TGAAAGCTCGCTGTGCCCCGTGATTCACTCTATTCTCGCCGCCGAAGTGGGCATAGAAGA
10 AAAAGCGTGGAATGTACAGCGCACGCCGCTGGACTGGACACTACACAACGACACGAAG
AGGCTGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 815>:

GNMOP70F gnm_815

15 AGGATCCCCGCCGCTTCGGTACGCGCCCTGGAAATGTTGGCATGGCTGCCGGGGAAACTC
GGTTCCCTGTCCCCGATGCGCGGGCGGTCATCGAAGGCCGTCTGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 816>:

GNMOP96R gnm_816

20 ACGGACAAAGCGTGATGGTCGTCGGGCATCAGAAAGGGCGCGACACCAAAGAAAAAATCC
GCCGCAACTTCGGTATGCCCGCTCTGAAGGCTACCGCAAAGCCCTGCGCCTGATGAAGA
CGGCAGAAAAATTGGGCTGCCCCGTAATGACCTTTATCGATACGCCGGGCGCGTATCCCG
GCATCGGCGCGGAAGAACGCGGGCAGTCGGAAGCCATCGGCAAAAACCTGTACGAACTGA
CGCGCTGCGCGTTCCCTGTTTTGTGTACCGTCATCGGCGAAGGCGGTTTACGGCGGTGCGT
25 TGCGGTCGCCCTAGGCGATTACGTCAATATGCTGCAATACTCGACCTATTCTGTTATCT
CCCCGAAGGCTGCGCGTCTATTTTGTGGAAAACGCCGAAAAGGCGGGCGGATGCGGCTC
AGGCTTTGGGCATTACTGCTGACCGCTGCAAAAGCTGGACTTGGTCGATACCGTCATCA
AAGACCATTGGGCGGCGCGCATCGGGGATTGCGGCAAGACCGCAAAAACCTCGTGGACAT
CATCGCCGCTTTAG

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 817>:

GNMOS68TRB gnm_817

TAGCAATTATTGTTTCGAAATAAGGTGATATTGCCATCCCGGCTGGCCCTGGCATCCCTC
ATGCGGGTGAATGCGTGGAATGTTAAGGTTGTAATTTTAAAATTGGTGAGTTCTCGATTA
35 CCGTTGTTGTTAAAATGTTCAAACCTTGTTGTTGGTAAAGTCCCGAAAGATGTATCGCAAG
TTGCCCCCACGAAAAAGTTGACCTCCCAAAGAACTGGTCCCCCACTGGCTTATACCA
CCTCGACCCTAAACTGGTAATATATCGTCCGCTATGCGTCTAAAGGTACCCGTGTTGTT
GAGTAGGCTAAGTCGCCCTCCGCGTGTGAGCCCGTTGAAGGACTCAACTCGCCCTCTGTC
TAACTCGCTTAAAGGTCGTCTTTATACATACCCGTAGCAGCTGATGGTGAGGTGGGCACC
GCCCCAACTCAAATTGTGGGTTTGTAACTGCCCCGTTACCCCTGGTAAATGGAACACC
40 TCCTATGTAAGATCTGATAACCCCTCGCCCCGTTCTGGCCCGGATACTGTGTACCGGA
GAGTAGGTTGGCCAAAGTGAGTAATGTTAAACGATTTATGTTTAAACGTGGACGCGGTG
GACCCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 818>:

GNMOT05TF gnm_818

5 GCGGCAATCCACCTACATGCGCCAAGTCGCGCTGATTGTTTTATTGGCACACACCGGCT
GTTTTGTGCTGCGTTTTCAGCATATCGGAAACTTTTGGTATTGTGGCGTAAGAATATCG
AAGCCTGACAGCCTGAAGCAGTTGTTTTGCTATTGTCTTTAACGGGCGGGACGCGTCC
TTCGGCGCGGCATTTCGGCGGGCCGAAACCCTTTCCGGTGAAAACGGATTTTGATTGCCG
CCCGATGCTGTCTGCAAGTTGCGGCGGCTTCCGTATGGTTTGAATTGTTGACAGGATGAT
10 TGGAGGGCTTATGCAGTTTCTTACCGCAATGTTCCGGCTTCGCGTATGCGCCGATGCG
CAGGGACGATTTTTCACGCCGCTGATGCGCGAACACACGCTGACCGCCGATGATTTGAT
TTATCCGGTGTTCGTATTGGAGGGGTGCGCGCGCAGGAGGATGTGCCTTCTATGCCGGG
TGTGAAGCGTCAAAGTTTGGACAGGCTGCTGTTTACGGCGGAAGAGGCGGTAAAGCTCGG
TATTCGGATGTTGGCACTGTTCCCGTGTTACGGCAAACAAACCGAGCGTGCGCAGGA
15 GCGGTACAATCCGAAGGACTCGTGCCGTCAACTGTCCGCGCCTTGCGCGAGAGGTTTCC
CGAACTGGGCATTATGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 819>:

GNMOT41TR gnm_819

20 GGGTATGCATGTTTGATTCCGCTTCTTTCAGCCACGTGCGGAAGCCCCAGCGTTTGAAAT
CGACACCAGCTGCGCCCATTTTCGGCGTAGTACGGCGCAGGCTTTCGATGCCGTCTGAAA
GCTCGGCGTGCAAGTCCACATCGGTTTTAATCGTGACCAAATCATACGACAGCGGCAGTT
GGGGCAGCGCGGCTTGCGAGTTTTCGCCCACCTTGCCCTTGATTTCGAAGCGTGTCCA
TCACACCAGCGAGCGAACCCTAGGCTTCCAGCCATTTACCGCCGTTTTCGGGCCCGGGC
AATTTGAGCTGAACGTCTATATGCCCGTTATCGCCTACAACCTCTTGCAATCCATCCAC
25 CTGTTGGGCGACGCGTGCAACAGCTTCAACGAACACTGCGCCATCGGCATCGAACTCGTG
CCGGnAAAAATCGACTATTTCTGCAACATTCCCTGATGCTGGTTACCGCATTATACCGT
AAAATCGGTTACGAAAACCCGCCAAAGTCGCCAAAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 820>:

GNMOU02TR gnm_820

30 AGGTTGGCTTGTGTTTATAAAAACTTATTACATGTAACGGTTTGAACGGACATTCCGTC
GGGTCCGAATGTCAAAAAGGCGCGATTGTACCAAAGAAGTTGGACATAATTTGTTTGCA
GGCTGAAGATTTGCTTAAAAATTCATTAAGATGGGCGGAACAAATAGTTTGGGTACAGCG
TGTTGAAATACCGCTTATCCCTTAAATAGCGTCCGAAATTCTGTTCCGACGGCATCAAG
35 ACACACGGTAATCCGTCTGAACCCCCATTGACATCAACAAACAAGAGCATTGAATGAA
ATTCATCGACGAAGCAAAAATCGAAGTCGCCGAGGCAAAAGCGGTAATGGCGCAACCAG
TTTCCGCCGCGAAAAATTCGTACCGCGCGGAGGTCCGGACCGCGGCACAGCGGCAAGG
CTGCAGCGTCTGGGCAGAAGCCGAAGATCACACCAATACCCTCGTCGAATACCGCTTCGT
TAAACGCTA

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 821>:

GNMOU06TR gnm_821

GGTAACTGACGGATCGGGCATTCTTAAATTACCCGTGTATCGCTGTAAATCTTAGAGAT

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5 GGCGGAATATAGCGGACTGCATCACCGCCCGCCCCGATTCAACCATGGCGCGCCATGCCG
ACATCCACATCACGGCGTCGGTTTCAAAGAAGCCTGCCCGCTGGGGCTTGCCCCGACCA
CCAGCACCACCGCCGTCATGGCTTTGGGCGATGCGTTGGCGGTCGTCCTGCTGCGCGCAC
GCGCGTTACGCCCCGACGATTTCGCCTTGAGCCATCCTGCCGGCAGCCTCGGCAAACGCC
10 TACTTTTGGCGGTTGCCGACATTATGCACAAAGGCGGCGGCTGCCTGCCGTCGACTCG
GCACGCCCTTGAAAGAAGCCATCGTCAGCATGAGTGAAAAGGGCTGGGCATGTTGGCGG
TAACGGACGGGCAAGGCCGTCTGAAAGGCGTATTCACCGACGGCGATTGCGCCGCGCTGT
TTCAAGAATGCGACAATTTACCGGTCTTTCGATAGACGAAGTCATGCATACGCATCCTA
AAACCATCTCCGCCGAACGTCTCGCCACCGAAGCCCTGAAAGTCATGCATGCAAACCATG
10 TGAACGGGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 822>:

GNMOU37TR gnm_822

15 TTTTTCACACGCAGTCCGAAACGTGACACGGAGTTTGGCGTCGGACAGGTAAAATGGTGG
CGTGCTTATTGAAATTTGACAAAGGTCGTCTGAAACCGAAAATATGGATTTCAGACCA
CCTTTGTTGTATTTGGTAAGTATATGTTCCCGTTGTATAATTACGGAATTGCAATTCAAT
ACAAAATACACAGGACACGCCATGACAGAATCCATCACATGAGACAGTACACAATACGAT
GTCATGACTGTAGGCGCAGGCCCGTCAGGTTTGTCTGCCGCCATCACAC

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 823>:

gnm_823

ACACCGTCTTGTTCGGCGGTATGAATATGGACAAACAGACCGCCGACCTGCGTGCCGGCT
GCGAAATCGTCGTCGCCACCGTCGGACGGCTGCTCGACCACGTGAAACAGAAAAACATCC
25 ATTTGAACAAAGTCGAAATCGTCGTTTGGACGAAGCCGACCGTATGCTGGATATGGGTT
TTATCGACGACATCCGCAAAATCATGCAGATGCTGCCCGCCAACGCCAAACCCTGCTCT
TTTCCGCCACCTTCTCCGCCCCGATACGCAAACTGGCGCAAGACTTCATGAACGCGCCCG
AAACCGTCGAAGTCGCGCGCAAAACCGGCATCGCAACTCCAAAGAGAAAGAACCCAAAC
CGTCATTCCCGCGAAAAATAGAAAAACAAAAAACCCTAAATCCGTCAATCCCGCGC
AGGCGGGAATCCAATCCGTCCGTTTCCGTTTTTTTTTTGAATTTAGGTAACTTCCAA
30 CCGTCATTCCCGGAAAGCGGGAATCTAGAACTCAAAGCTGCAAGAATTTATCAAAAAT
GACTCAAGCTCAAAAAACCGGATTCTACGAAAACAGGAATCCGGAGTCTCAGGGCTGGC
AAAACCGTTTTACCCGATAAGTTTCCGTACCGACAGACCTAGATTCCCGCCTTCGCGGGA
ATGACGAAATTTTAGATTGCAGGCATTTATCGGATAAAACAGAAATTAAGCGTGACGAAA
ATTTATCCGAAATCACAGCAACTTTTCCGCGTCATTCCCGCAAAAGCGGGAATCTAGAAA
35 CTCAAAGCTGCAAGAATTTATCAAAAATGACTGAACTCAAAAAACCGGATTCCCGCGAA
AACAGGAATCCGGAGTCTCAGGTTTGGAAAAACCGTTTTTCCCGATAAGTTCCGTACCG
ACAGACCTAGATTCCCGCCTTCGCGGGAATGACGAAATTTAGGCTTCTGTTTGTATTT
TTGTTTTTGGCGGAATGACGAAATTTTAGATTGCAGGCATTTATCGGATAAAACAGAAAT
TAAGCGTGACGAAATTTATCCGAAATCACAGCAACTTTTCCGCGTCATTCCCGCAAAAG
40 CGGGAATCTAGAACTCAAAGCTGCAAGAATTTATCAAAAATGACTGAACTCAAATAAA
CCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 824>:

GNMOV26TF gnm_824

45 GTGCCAACAAAGGCGAACCCCGGAATGAGGCCGATACCAATATTCTGAAAAACGTCGAA
TCTGCCTTGCAAGACGCGGACATTACCGTCGGCAACCTCGAAGGCACGCTGTTTGACGAA

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5 GGCGGTACGCCGAGAAAATGTGCAAACCCCAAAATATGCTATGCATTCCGAACGCCCT
CCGCATACGGGCAATACCTTGCCGACGCGGGATTGACTACCTCAGCTTCGCCAACAACC
ACAGCAACGACTTCGCGCGCAAGGCATCACGGCAACGGCGGAGCGGCAGCTCTTTTA
CATACTCGATCGCGCTAAAGCCGCTGCCGATAACGATGCCAAAATTGCGGGAAATACCGC
CATCGCCAGATAAATTTGTCCATCATCAGACCTTTACTGTTAGACGAGACAGCATTG
CCGCACGTTTTGGGGCTTATCTTCGATTGCGCTACGTGCGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 825>:

GNMOX61TRB gnm_825

10 GTTCCGTCCTTGATTGCGATTGGTCGATAGTCTAATACTACGATCCTTGTTGAGGTAGATG
AATGTAACGTGGTAGAAGACGTTGTTACTTGTGTTGCCCCACGACTATCCGAATGCGG
ATGAAGAAATTGTTGATGCATCGGCCTAGGAAGGCCCCGTAATTCGGAAGAAGCTGTT
ACGCCTTCGTTGTTGAATCGTCCGTTACCGAAGGACCCGATGAAGAACTGCTGACACGT
15 CTTGTAATTGTGTTTGTGACGTTACTTCGATTACGGTGACCGTTGTTGAAGAAAAATCGG
GTGAAGCGCTTGATGACACGTGTAATTCTGAAGGTACAGACGTTGACACGTCTGTAGTT
CCGTTGAAGTAGCTACCATTTATTTGTGATGATCCGGTAGAGTCCGTCGCGGATGAATCGA
CCGAAACTATTGGCGCAAATGAAGAAATTGTAAAGTTGCTACTTCGATTGTATGTGAAT
ATCGGCCCATTAAGATAAACAAGGGGGCATAGACGAGCAATATAATTGCAGATAAACC
CGTTGTTGAGTCGAAATGTTTTGCTGAAGATTGCGCGA

20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 826>:

GNMOY35TRC gnm_826

25 AAAATTTGACCTCTCCTCAAGTGAACCTCGTTCCCTATCTAAGTCCTCCTTGTAATCCCC
CTAGCCCATTTGACAAGCGCGAACGTTCAAAGTTCTCCTCCCTCTCAGAAAGGAGGCGACT
TAGTTGTAGGCCCTTTTCATGGTCATTCGCCCATGATCCTATTTTAGCTACGAAGTACATT
GCGGCAAGTGGATCTTCGCGGCCACTTCATTTCATCCTCGGCACCTTTTATCTTTACGGC
GCGATGGGTGGCGCCATAAGATTGGGAATGCACCTATTGTAGCACGTCGATTCTGTGAC
CATCAGTGACCTTGATCCTACGTATCTGAGCCGTAGAGCGTAACCTGGATCATGACTGGC
30 CCCGCGAGACCGTCTTGTTCTGTGGTCCGGTCATTTCTCGCATTGATTACCGCACGATG
CGCGAAGTTTCGGCTACAAGGGTTACGAGGATCCGATGCTACTTTTATTCCTTCTTGTC
CGCTATTGGTAGCTCTACCAGAGCGTTTAATCGAACGACGTAATCAACGATAAGGGCCG
TGTCTGCCGTGGGATCCAATTAATACTCTATGATATGAGTCGATGATAGTTACGTAGTA
TTCGC

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 827>:

GNMPB01TRB gnm_827

40 ACACTCTCCTAACACTCCTGGCTGGTACACGTTGCTTGAATTGGGCCCACACCCTAGATG
GTACCCCGGGACCACTGGACCCCGTGCATCTGAAGGTCGGACAATGATGTCGATTTG
TTGGACCCGGAAGTGGACCCCGTGTGGACCCCGCGTCGTTGTCGACGGCACAGATCCTG
GCCCCGGCGCGCACGCACTATTGTATTCCTGGTGATACTGTTGTTGTGTCGCATCCCG
GTACCATTTGCCAAGATCATGGCGTCGTTGCTAGACGAACAAGTAATGCCGCCCGTTGCG
TTGTGATTGCGTTCCCGTTGTTGCTTAACGCTCGGTCGAAGTGGATCGGTGAATTCCTT
GTTTCTATGGACCTGTTGTTCCCGTTGTTGTGCGCAATA

45 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 828>:

gmm_828

GGTGGCGGCGCTCTAGAACTAGTGGATCCCCGGGCTGCAGGAATTTCGGCACGAGCCCA
CAGTGAGTTTTCCCCACACTCGGCTCCTTGGAGCCCCGACAGTCCATAGCACCCAGGAG
ATGTCTAACCTTAGGGACTTGGAGGCCTCCAGGGGTCTAGGCCAGCTGAGTTGTGAAGT
5 TGCAATGGCAGGGACAGGGCAGGGCCAGGGTTCGTGTGATTGTATCCGAAGTAGT
CCTCGTGAGAAAAAGATAATGAGATGACGTGAGCAGCCTGCAGACTTGTGTCTGCCTTCAA
gAAgCCAsACAGGAAGGCcTGCCTGCCTTGGCTCTGACCTGGCGGCCAGCCAGCCAGCCA
CAGGTGGGCTTCTTCCTTTTGTGGTGACAACGCCAAGAAACTGCAGAGGCCCCAGGGTC
AGGTGTAAGTGGGTAGGTGACCGTAAACACCAGGTGCTCCAGGAACCCGGGCAAAAGGC
10 CATCCCCACCTACAGCCAGCATGCCACTGGCGTGATGGGTGCAGAGGGATGAGGCAGCC
AGGTGTTCTGCTGTGGTTTGGGAGCCTATAAAGTGAGACTAGGCTGGGCATGGTGGCTCC
CATCTGCAAAACCAGCACTTTGGGAGGCCAAGGTGGGCGGATCGCCTGAGGTGAGGAGTT
TGAGACCAGCCTGGCCAAACATGGTGAACCCCATCTCTTAAAAATATAAAATTAGCTGG
GCATGGTGGCAGGTGCCTGTAATCCAGCTACTCAGGAGGCTGAGGCACGAGAGTCGCTT
15 GAACCCGGGAGGTGGAGGTTACAGTAAGCTGAGATCTTCCCACTGCACTCCAGCCTGAGC
GACAGAGTGAGACTCCATCTCAAAAAAATAAAAAAATACTCGAGGGGGGGCCCGGTAC
CCAATTCGCCCTATAGTGAGTCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 829>:

20 GNMPE45TF gmm_829

TTAATCAAACCTTTAATTCATTATTAAATGCCTGCAAAAATATATAAAAGCGGGTGGGTTT
TCCCGACAAATAGTTTTAATTTGGAGCAGCTATATTTTTTTTGGTGCAATGCGTAAATCTT
ATTTCAATTATTTATTTTGAAAAATGTATTAAACAATAATGGAATTGGATATTGAAATAT
25 CAGGTTTTTTTTGAATTAGATTATTATGAAGATAATTATAAAGTAAATTGGAAAAATAATA
ATGGAAATTTGATACAAACGACTAATTAATGGACAAATATAAGTTAGATTGGACACCCA
AACCTAAAAACTGTCTGAACTCAATTTGGTTTTCAGTAAGCGTAGGTTGGCTTAAAAAC
CCAACCACCAAAATGCCGTCTGAAGCGGTATTTCAGCTTTCAGACGGCATTGTTGATGAATG
AAACAGGATATTGAGAACTAAGTTCTTTAAAAATCCTACACCTGCTCCTTCCACGGCAGC
ACCTTGGTCAAAACGGCAGACGGCTACAAAGCCATTGCCCGTATCCGAACCGGCGACCGC
30 GTCTTCGCCAAGGACGAGGCAAGCGGAAAAACGGGATACAAACCCGTTACCGCCCCGATTA
CGGCAATCCGTATCAAGAAACCGTTTACATTGAAATTTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 830>:

GNMPE65TR gmm_830

35 CCCGCCCATCATCGTACTGCCCGAAAGGGACGTACCCGGAACCAGTGCAAACACTTGGGC
AACGCCGATCATCAAGGCATCAATCGGACGCAATGCATCAACATCGGCAATTTTAGGCTC
TGCTCGGCTTTGGCGTTTCTCCACCCACAAAATAAAAAAACCGCCCAAAACAGCATGAC
TGCAACACTCAAGGGGTTAAACAGATACTCTTTGATTTGTTTGCCGAACAACAGCCCCAT
CACGGCGGCAGGTATAAAAGCAATGGCAAGATTAAGGACGAAGCGGTTGGCTTTCCGGTC
40 TTTTCCCAAGCCGTGCAACACATTGCTGAAACGTTGCCGGTATTCAAACACTACCGCCAA
AACTGCACCGAGCTGGATGGCAATTTCAAAAACCTTGTGATTGCTGTGAAAACCAATCAG
ATTGCCGAGTTTCAGGCTTCATGAAGCGGAGGTCAAACCGATCGACAGGGAGAAGGTGCCG
GGGAGGTGCGGGAAGGAAAGTTTTGCAGATTGACGGCGAAACCTGCTGAAAAAT
CCCGAATTGTTGCTCCGCGCGATGTATTCCGCGAGTGGTCTCAAACAATATTGCCGGTATC
45 CGCGTTATTTTCCCGATTTACCTACAACAGGCGCAGCAGGATAAGATGTTGGCACTTTAT
GCACAAGGGATTTTGGCGCAAGCAGACGGTAnGGTGAAGGAnGCGATTTCCTATTACCGG
GAATTGATTGCCGCCAACCCGACGCGCCCGCGTCCGTATGCGTTTGGCGGCAGCATTG
TTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 831>:

GNMPE66TF gnm_831

5 GCTTCAGACGAGCCATTTATTATATGGAGATTATAGTGGATTTCAGGAAGCGCGTTCTTTC
GCGCGCGAAGACGGCAGGCTTTGTGATGCCGACAAAATTATCGCCGCCGCTACGGT
TTGGCGTTTTCTTTGGAACACGCTTCGGAACGCAGGAAGGCGGCGCACGTTCTGTATC
GCGGATTTGAACATTACCGTGCCGTCTGAAACGCTTGCCGATGCCAAGGCAAACAGCCCC
CTGTTGTACGGGGAAACTGCTTTGTGCGATATTGTGCGGCAGAAGACGGGCGGCAATGTC
10 GAGTTTAAAGACGGCGTATTGACGGCAGCCGCTCCGCTTCTGCCCGTCAAGGACGGTCAG
ACGGCATTGTGTCACAACACGGTCGGTATGGCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 832>:

GNMPF05R gnm_832

15 ACTATCTTCTAAAGGTTCACTTTTCTCCAAAATAGAAAAGGCAGCTTGGATATTTTCAA
TGGCAGGGAAGGCAAATCTTCAACGAGACTGCCACAAATAGCGACAACAGGAACTCCGAC
AAGGGTTCTTTTGTCTACACCAATAGGCGCTTCCCTGCTAACTTTGACGATCTAGTCT
TCCTTCACCAACG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 833>:

20 **GNMPF17F gnm_833**

TTTTTTTTTTTTTTTTTTTAAAAAATATCATTTATTCTTTTATAAACAATAGCAATAAAT
TTATTATATGTTAACAGCAGAGTGATGACATCATCACGTATCACATAGCTTCTGAAAAAT
TCCACCATACACTTTTGAGAGAAGGACAGATAAATGGTCGATAACATCTTAGTATTATCA
25 TGGAAAAGTTTGTATCTATAGACCCCTCAACACCCAAAAGTCGTAATCAGTTCTACTCA
AGTAAGATTTAAATATATATCTATATTTCTGGTCTGAGATTCTTTTCACTTTACTCAG
AAACATATACCTGAAGGGGGAGGGGAGAGTGACAGATGAGTCTGTTTGTATGTGGAT
GGTCACAGAAATGACAGAAAATAGTTATTTAATCTGAATCTGGACCCTGCTGAAAACCTGC
CGTGATTTCTCATAACACTCTCCTGCCCTTCAGAAGTGAACTGGCTGATAGT

30 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 834>:

GNMPG84TR gnm_834

CGATTATTCTGACAATCAGCATTTTCAGAAGTATGCCTAAAAGTGGAATCAGACCGGCAA
GTAATGGCATTATTACCCCTTGAACGAACCGAAAACGACAAAAGCCGACATAATGATAA
35 AGGCGAGCAGTACGGCAAAGCGGATTTTTTCGGCGTGCACGCATAACGGCTCATAGCTTG
CCTGATATTGTCTACCGAAAACATGAAAGGTTTTTCGGCTGCGGACATACGCCGTTAGACG
GTAAAAGTTATGTGAAGACCATGTCGTATCGTCTATAACCTGCGGTATGCTTATATCGT
GAAACATGCCGTCTGAAGGTATGCCCATCTGCTGACAGGCTATGATTTCCGGAAAATAAT
CGCACAAAA

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 835>:

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GNMPH28TRD gnm_835

CGACGTTGAGTGCCCCCTTAACTTAACTCCCCCGTGATAGGGTGCCGAAAAACGTA
GGTGAATGCTTGTGGAAATCGTTAATATTGTATTGTTTCCTCTGCTTAGCGTGTTTCGT
AAAGTACTTGGTATCGTGCTAGTTAAAGATCGTGTTGTGGCTCGTTGTACCCCTGCGCCT
CGGTTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 836>:

GNMPH38TF gnm_836

CGCCCCGCCAAACGCGGCAAGCGGCATACCGGCGCCGATGACTTTGCCCATCGTGGTCAG
GTCGGGCGTGATGCCGTGCAAAGATTGCGCGCCGCGGAGCGCGACGCGGAAGCCGGTCAT
CACTTCGTCGTAAATCAACACCGCGCCGTATTTTCGGTCAATCCGCGCAAGGCTTTGAC
AAAGGCTTCGGTCGGGCGGACGAAGTTCATATTGCCGAAGAAGGGTTCGACAATCATTCA
AGCCATTTCAATTCACCTGTATAAAGTCCGGTCATTACCTGTGCTTTGCACCTCTTGAA
ACCGGGCAACGGCTCAGTGGCAGGGTTGGCAACCAAGTAACCGTATCGCCGACTTTCGC
CTGTCCCAATTCTTTTACGCCGGTATTCAAAAAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 837>:

GNMPH48TR gnm_837

GTCCGATTTGCCGACnAAACCGGGCCTGAAAGTGACCTAGAGGGAAGAACGCGTTAAGA
GGACAACCTCGAGCTGTAAAGACACCTGCCTAGGGGGTAAATGAGTGGTGAAACCGGTA
TGGGGTGTTAAAAGACAAAACCTACTGGCCAGAGGGGTAAAGCCTACCCAACCTAAAGTG
GTAATCACATGCTTATAAAGACTCATAATACCAATGTTATACCCCGGTGGGGGCTGATA
TTAAGACCTCTGGGTTTGTGAAATGGGCATCAGTGACGTGGTTGGTATTAATCAGAATT
AACGTAATAGTGCATATGGGTGGAGTAAACGTAAGTAACGTTACCTACCGCGTAAGGTTA
CAGATCAGATGGCTTGCACTAAACCTCTATAAATTATTACTCAGCTTGTATTACTGTTG
CTGTTGGGAACGGGGAAGCGGCTACCCACATGGGGGTAGAAAAAGTGGCGAGGCTTGCA
GTGATCCTTGTAATAGACGACAAGTTAATTGGGGGCTGGCTTAAATCGAGACCGTCTA
TTGGCCGCGTTATAGAACCATGTATAATAGTGCTGAAAAGATCAAGCGCAATAGTGGTA
CCAAGGGTAGACTCAGGGGTGCGGCAATACAACCTGACCGGGACGAACCAGGCATTCTAA
ATCCCGAAACTAGGGnTAGTTGTAGTAGAAAAGGCAGAATTGAAATTACTACTAAGTTTT
AGATTGnTAGTAGGATGCCTTCGATTCTnTAATCTTAAGAGACAGnGTGGGAAGGGTGGCA
T

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 838>:

GNMPI02TR gnm_838

AAGAAACAAACCTCGCCCCCTTCTACGCCCCAGGGAGCGACCATAAAACGAACTGT
CGACGCGACCACTGGACGTCGCCTAAGTGATTCGAAAACAGAATCCCCCTAGGTCGT
TCCCGCAGCCAATGGCAGAAACCCAGATAAACTTTGACCGTGATCCCCAATATACTCCC
TCCACCGTGGACAGAACATCAAGCAACGACAAAGACGTACCGCCACCCCAAGGATGCCA
GACCGACCAAGCAATTTATAGCAAGAGAATTTACCATACCACGAATGTTGTATAATCT
GATTACATTGTTAAAGCCCCGGTCGAAACGTGATCCCTAAATAGTTTCGTTGACGTTGCT
TCTCTTGTTACCCGTTGTAATATAAAAGTCTGGTAGCTAAGACTGTTATGCAAACTGT
TGCAAATTGTTCCCGTTGTGTCGTGTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 839>:

GNMPI04TR gnm_839

5 TTGCACCGGTAAACACATTCTTGACACCACGCTCGAAAATGGACACCTTACAGAGTAAA
GTGGCCCGGAATATCGTTAACACGTTGATGATGGTAGTGGCCCTGCGCGTAAAGCCTTTG
AAGGATGTCACCGTGTACGGGTGATAATTGTGATAATAGCGTTGACCTGTGTCATCGGG
GACCCGCGGACGATAAGTCGGCCGCTGGTAAGGTAACGCCTACCCCGACGAATCCTGGTG
ACCCTGGTAGGCTTGGCATGGTAACCTGCCAGGTTAGGAAGTTAAGAACGTTGCTCGAAA
10 ACAGCCCTAGATGGTACCCGTCACCTTCTATCCCCATAGGTGAGCTCAATGCCGCTGGAC
CCCTTCATTCACTAGCTTAACACATGTAGGCCCGTATGGTGAATCGTTAACACCGTTTC
GACGAAACTAACCGGAAGATCGTTGCCCTAGTGAATTGAGGCAAACCGTTGAAAGTGCTA
GTGTTATTTTCGTTTATCGTATGTTCTTAACCTGCCCCGTTTAAATTTGAAACAACCTGACGA
ATA

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 840>:

GNMPI06TR gnm_840

TTTGCGGGTCCCGCTCCCGGTAAGTAGTCTGCTGTGGGGTGTGACGCCGATGACACCTTT
CCGTCGGTGTACACTGAGGCCGTGTTCGTACAATTAACTTAAAGTTCGACTTTAAGG
20 TATACTCCGAGGGAGAGGGCTACCCGTTGCCGATGGAGCTGTGCGTAATAACGCCTAC
CTTGACCTCCCGTTAAACTCGTAGGACGGCGTGGACCTGATACTCCGGAAGCTAAG
GGAGACCCCTTGGTTCCGGAAGGCCCGGGTGTACCGCCTATGTTGTTGATCTGAGGCC
CCGCCCCCTGGTAGGATCCGGAAGGCAAAGCACTTGGGTGTGGTGGACCCCGCGATGAG
CCTTTAGCCGTTGGTCGCCGCGACAAGTAGTCGGGCGCTGTACCCGAGGTGCCCTAGTGC
AATTCCCCGAATTGGCGCCCCAAAGCTCGTTATACTTAAATCGTGCCGGAGTGCGGCTGG
25 TAAGGCACGGCCCCCTAGTGCAATGACGACGCGGTTGCGTCGCCGGTCGACGCAGGGTCG
TTTGGTAAAGTTAACGTAGTTAACCTGACAACGTTGGTACCCCCGTTGCTCCCGTGGA
AC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 841>:

GNMPI11TR gnm_841

30 GTTCCCCCTAACACAATCCCGACAAGAAGGCACGGTAACGATGTCGACAACGTTGAGCAC
TGTGATGATCACTACTACTCTAACTAACGCAAATTTCCCCCGCCTTACCCACCATCTAC
TACCACCGTCCATACAAGACCGAAGGATGATTATGGCACCGGTACCTCCATTTAAGTTC
CGGTAGCAATTTGACAAATACCCCTCTTGCCCTCCTATGTTTAAACACCTGACAACACAAT
35 GCGGTACCCCGTCGATGTCCTCTGCGTTCCCTCCACACCTTACTTTCCCTCOGCTAACGT
ATAGGCTGGCAGAACCCGTAGGGTAAGAATGTCTATTGTTCTAATGGCGGGTCCGTTCC
GTATTATGACACCGCTAAAGTTCTCCTACCACTACCACCCGCTTGATACCTATCGTGG
TATATAGATTCCCTTTATAGCCCTGTCAAACGCAATTCCATCGCTGCACTACACCTTA
AACTTAAATTCGAAGCCTGTTCCCTTTGTAAAGTTGTTCTGGTTAAAGATAAAGTTAACC
40 CTTGCTCGACCTGCCGGTATCGACTTGTCGTCGTCGCCACCGCAAGATCGTGTGGTAGCCA
T

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 842>:

GNMPI15TR gnm_842

GGGCCTAAGGTGCGACCCCTCTGGATGACCCGATCACGGAGGGTGTGCGTGGGGTAGGTG
GTACTAAAGAAATGTGTTGTACCCCTCCCGAGGTAGGCCGTGATACTGCTTCTGCTCGTA
ATTGCTTTGATTCCGCGGACGAATCGTGTGAAGACCCTTGACCTTCGATAACTTTATCC
5 CGGTGTAATGCCGGTAACACACCGTTAATATGTCTGGTAGCGTTGTTGTGAAGTTGCGA
CGTAGATGGTGGACCCCTTAAGTGGTGAAGTTCCCGCCGTTGGTTCGGTTCTGTTGTAGG
ATATGGTGGGTGGTGCAGAAAGCTGGTGAAGTTCGCCAAATTGGTCGTGCCCTAATAACTC
GTTGACCCTACTAATTGCCCGCTAGGGAAAGGTAACGACCCCCCTGGCTAGGCAGAAAGC
CACTCCACCGAACCATCCAAGACAACGACGACCACTAATATCGCACCTAAATATAATGC
10 CCCAAACTTGTGTTGATATGTGGTAAAAAGGTAAATGGCACAGGTATGTTGTATCCCCG
TGTCACAATATGTTCCATCCAACCTGGAACGCAGTGAATTTGGCAGTGTATCCTGCCT
GGGATGAAAGGGGTGGAGGCCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 843>:

15 GNMPI18TR gnm_843

TTCCGCCTCCTTATGTCCCTTATCCTTAAACTTGACATTGTTGCGTTAAGTATGGGACTT
TAGCCTATTAACTGCCCGTTGCGGCAAACTAAGTCCGTCTACATAGGTGTCTGAATATC
CTGGCCATGGCCCTGGTGTGTATGCTGCTTACTGCGAAACATCTGTCTGCTTAGCTGGTA
GAGTAGTTTATGTGGTGTACCCCGCGGCAACTGCGTTGCTGGAAATCCTCCCTTACCTT
20 TATATCCCTCTTAAAAACCCCTGTGATTTAAGCTACGGTGGGATATGCCCGGTGTAGTA
AGTCGATGTCTAATTATAACTCGTGCGGTACGTTTGTGCGGCTCGCGTTGGGAAGTTAG
GTGGCGCGGTAGTTCCTACGTGGCAGCAGTGGGCTAGATTGCTTACAACGGCCCGGCCG
AAGGTACGATTACGCGTAGTGCGTTGGCCAT

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 844>:

GNMPI22TR gnm_844

TAGCCGATAAATGGTCGCCGCCCGCTGTTACAAGTTGTAACACTAAGCCACAGTGGACC
AAACCCAACTAGGATAAGGTAATGAAGTTGTAGATAGCATAAACAGCATGGTAAGGTGA
GACAATGTTGCATCGGCCCAAACCAACTTATCACATAGACAAATAACGTTGCTCGAATG
30 TAACGCGCCTAGATGGTACCCATCCACTTATAGGCCCGCCTAAGTTCAGACCCCGTTCCG
TGAAGCACCTTAAAGCGTGGATGAGCCGGTAGGCGCAGGATACCCTGCCGCTGCATTAGG
TAATGGCCCTATTAAACGCCCGTTGTTTATGGCTACTATGTGGGCCCGGGCTGTACTGA
AGAGTGAGTTGCACCTGACGTTGATAATGCTGGAAGAAATGACCCGACTCCTGCCGCGAGT
TGCAAGACCTGTCCGGTGGTGGTCCCTACTGTGGTGCCGACCCTCCTCCCGGCCATAGGGT
35 GCCTGAGGACGGAAATTAACCTGGCTAGTGAGTTGTGCGTAATAGGGATGTGCCGGGTGG
AGTTGCTGAGCCCGTTGCCTAACCTGGGGACAATTAGATTGACGGTTCGGTGGTATTGG
CGTCGCCGGGTATGACGCCGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 845>:

40 GNMPI23TR gnm_845

AAAATTTCCGGTGCCATTTAATCCAACCTGTTCCGTAGTATACTTTTCCCTGTTAAGTCGG
TGGCAACAGTGAAAGAGGTTTGTATTGACTGTTTCCCTTTAATAGCCGTGTAGTTCGAACG
GTGAACGGTGTTCGACGTGGCACCCCTCTTCCATGTACTCGCGTGGCACCCCTATATTGTA
CACGGCGTATCTCTAGCATAACTCGTCTCGACGTTGTACAGCCAAGTAGTTTTCAATTT
45 GTTAATATTGCCGATGTGTTTCGATGGGTCCGCTCGTCTTTGGTACTTGTCCATAGATA

AGTCGCGATTGCTCTTGGGAGTCGTACGCGCTAGAGGCCCTATTGCTACTATTGAAATG
TGTGAGCATGAAAGGGTTCTGCGACATGTTCAACCCACAGGCCAACGCTACGACAACAA
CGGCCCTCCAGATGCTAGGCGGTATCCCC

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 846>:

GNMPI27TR gnm_846

10 TTCGTCAAACCAAAGnACAACCTACAGACACGGCAGGGCAACCAGAGAAATATTCCACACC
GACGCAGCCGTA CTGACGCCAAAAACAACTTACAAGACCAAGTCCGGCCCGGGCACC
TACCTACACGTCTTACGCGTTAACCCACAAAACCCGTAAAAAATTCGCCAAAACCCAC
15 CCCCACAACCTAATTCTAAGGAGACCCACAGACAACGCAACACCCGAAACCAACGACGGA
AATAAAGCCCGCATCCGCCAGACAAGCACAATAACCCCTCCACCGAAAATAGCGCC
CGCACTGCACCAACCACCCACACCCAAAACCCACCCGTCCCCACACAGGATCCATCCT
AACGAGCCGGAACAGCCCCGGCAACCCACGAGTGTATGTCTACTTGTGCCAGTAGAACC
CGGAAACACGGCCGTCAACCCAGCCCTCGTAAAAACGAGAAAGACACTCTGAAATGCAA
20 CGAACACCATAAATAAGTCGGCCACAGCGTACCACAGTACCCGGCAACCCGGTCAGCAA
CACCGTATTAGGCAGCATGCTACTGTACACCGCAATGGAATAACGTTCTCGCGACCGT
AAGTTGCTCTCTCGGAAACACACTCCTAGTCACCTAGGAGTACAAAGACGGCAAAGCCAA
CACTAATTGCCCTAAAACACCCCAATGGACCCACACCTA

- 20 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 847>:

GNMPI28TR gnm_847

25 AAATATAATCCGTTTAAACTGAAGAGGCCCGGTCCGTCCGTTAAGAAGAACCGGAATAGA
CCGAAATCGAAACTGAGAAATAGCCCGTTGAGTGACAAAGAAGTGTGGGTAGGGCGTCCA
CTCCCGTTTCGTTAACAATGGCACAACCTGGGTGCCACTATTGGTCCCCATTGGCACAAT
ACTAGATCCCCGTTGATCCGGGCTCTTCGCTTTCCCTTGGTGTGGTGGTGAAGTTCAT
GCACATTACCGTAATCTAAACGGTAAAGTGCACACATACTAGTTTTAGTAGGACCGCGT
CTTGACGTGGACCCATTCAAACTAGTAGTTACTAGGGAGGTGGACATTGTTGAAAACC
AAAAATCTAGCCAAGAAGTTAAACATATACAGAAAGCAAAAAGAAAAATAAAAAATTC
30 GTTGGGCAAAAAGATAAGTAGTTCGTTAAAGTTTGAAGAAAACTAAAAGTAATTAAT
TGAAAAGAAAAAGTTTGCAAAATGTTAAGAAAGTACCATAAAAAACATTAAAAAACTAAAC
GACCACTTGAAAATAAGTATACCACG

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 848>:

GNMPI29TR gnm_848

35 CCACGGCCCTCAACCTTAGCGACACCCTAATCCACCTAGACGGGCACCCTAAAACCTAA
TCCGTGCGCACTCGCTACACCAATTCCCTACCGCCCCCACATACACGGGCATCCCCCTCCA
CCCAACCTACTCGAAAGAGCTGGCAGCCCCCGGCACCCGGCAACTTTAATTACAACGCCC
ACCGGATCGCTCGAACGGCCCACTCACAACCTCAGTGCCTACAGCCCAGGCGAAAACGCA
40 ATCTTATGCCCTTAACCGAAGAAAAAGACCGCTCGAAAATCAAACCAACCTAGACGATT
CCAGACCTGGACCCTAAGCGTAATATCAGCGCACCAGCGGCCGGGAATAGACCTAAGAACA
AAATATCCGGTGCCCTGCAGTTAAGCGCCCCCTCCGGCTGGCGGCCTAATCTACTCCGAA
TTTCGTGCACTCTTTGACTATCGACGCCATGGAACTGGCCCGCCCGGGGAAGCACCGTT
GGACGAGCTTGCCGGCGCCTCTACCTAGTTTCCCTCTTTAAGAACGGCCAGGGTGATAAA
AACAAGCTCTGTCCCTAACGTCCCGGCCACCCGGCGCGCCGGCAGAATCTCCCGTTGC
45 CACTTACGGCAACGGCGCGTATTTGCTCCCACGCGTTCCCCAACG

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The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 849>:

GNMPI31TR gnm_849

5 CCGTGGnCCCCACGGTACCCACCGAAGGTGCGCCTGACCCGAGCGAAAAACGCGCCCAG
CCCCACCCCTAGTTCCCGTTTCGACCCTACTAGAAATGGCAACCCATTGGGTAGCACAGTT
GTGTGGACCATTTGGTACAGAGCTTGAATGTTAACACCCCCGACCGAGTAGACCGGTCGT
GGTAAAGGCAATGCCAATACCCACCGCCCTTAGTTAAGTACGGTACTAATCTGGGTAAA
GTTCCGGAAGTGCAGCTATCCTCCCACCCTCCGAGCCGCAATTGCAGTCCCCGTTTCGCATT
GGCCATGTTGACCCTGTTGCAGAGGCCCTGGCTGGGGCACAATGGAAAAATAGGCCGTT
10 GGCAATGCCGTCGGCACCACTAAACGGACGTTTATCTGGCTGGGACCCCTCCCGCTCCT
AATGATCCCTGTTTCGTACTATGTTTAAATGAATTGTGTAGACAGAGCCCCCGGGGACGAC
CCGTTTGACGGTGGATAACCTTATGTTGTGTGACTGGCGCCCGTTGTCAATTGTACAAAC
ACAAGGGCCGCCCCCGGACTGGGGTGGCAGTGGACACCGAAGTGCTGACCCGGCAGGT
AG

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 850>:

GNMPI32TR gnm_850

20 TTGCCTTTGTTGCGTGTGCCTGTTTGCTTGTGTTTGTATCTGTTGCCCTTTCGACCTCGTC
GGGCACCGTTAAAAACGCGGTCGGTGGGACGTCGGTGGAAATCGGGCGCTGTTTGC
ACCCGAAAACTTTGTTTAACTGATGGTCGGGGTGCACCGGTCGGTGCATGGTCACAT
TCCTTAATCTCCCCAGATCCCTTGGACACCTTGACCCGGCCACTGGTACGGTGACGTC
ATCCGGTCCCAGTCGTTTAAAAACCTCTTGATTGTCCTGCGTCCCAAATACTTGTGT
ACCCCGGATAAACGGTATACTAGTTCCCTTATTCGGACATGTGATCATACTCATACTTT
25 TCCGGGTGGTAGTAAAAAGGTCCCCATGGATATAGTCTAATTCGACGGTGGTAACGGC
GTCTCTAGGTACTCGGTATGGTCATGGTCGGAATCCTTCTACCCGGGGTGTGTCTGATGG
TATGGTATCGGCGTCGTCTAATATGGGTGATTGTCAACCTGGATGTGATGTGTACGTTG
CTCGAAACATCCTGTGTTGTCTCTACGGTCTACCATTCCTTACCCTGCTCGTTCCAGTCC
CGCTGCTCCTAACATTGTAACTTTGATGACGCTAGTGTAGCCCTAGCGTTTCTCCCGT
TAACGTTAATGGTCGGAACGTGTT

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 851>:

GNMPI33TR gnm_851

35 GTGCAGTTCCTGACACGCATGGTACTACGCCTAATAATTACTTGGATCCGTGTTGTACTT
CGATTGACCATGGTCCTGCTGGATACTTGCCCTTGTAAGATCCTTTGACCCTTGGTCACG
CGGAAACGTGCCATGATGAAGAGTAAAAATGTGCGACCCATTAATTCGCCATTACCGAGT
TGTGTGAGACTATGTTGTGCACTGCTTGCAGGAGAATCATGGCGGTTAACAAACCAAGA
AATCATATTACTAATCCTGGTTTGTAAATATTTGTTGGTGTATGGTGCACCGTGCACGACC
CCGGAGTCCGATGGTGAATAAACTGCTTGCGTTGATTGTACACTGGTTCTCCGTATTGA
GGCATTTGAAAAATCGGTGGAAATTTAAATTTCACTCGTAAGTTTCGTTTCACACGGATTG
40 TCCGGATCACGCCCTTACGACGGCTAACGAGTAGGTGCACCGCCCGGTAGCAGAAAAATC
CGCTGGCACTGACGCGTTTACTTGTGTTTAAACATACnTGTGCGACGCCCGTTGAAGCAAT
GTGTACTTCTAACTATCCGACG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 852>:

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GNMPI34TR gnm_852

5 TCCACTCGGATAATACTTGTACTACTTCTATGTGTATTAGTTACTTTGTTAATACTGGTC
TCGTTGTGTGTGTGACGAAAATAACGGGCTCGTATAAATCGATTACTGCTGTTTTAACT
CGACGGTAATGTTGACGATGGAAAATTTGTTTGCGCCGATTTGGAGTACTTCTAACTGC
10 CCAAACCAATTGGAAGAAAGTCTACTTCTGTCTTGGTGTGGTAGATGCCCTGGAAAACG
TTATTACCGTTGTCTCCCGGATGAAGTTTCCGTTGATATTATTACTGTTTCGTGTTTCGA
TTAGTTGATGATGTGAAACCATCGTGTGCGGTAAATTTGTGTGACCCGGCACTTGAAC
CATCGTAGATTGTAAATTGAGGTGAGAAAGCGGTATCGGCCCTGGTAATGAGATCCCTG
15 GTCCGAGTACTGAAGAAGCTTAAGTTCGTAATTGATCGACGATTACTAATGGTAACCTTG
ATCACCTCTGTCTAATTCTGTTAAGTTGCGTAAGCTGCGCGTCATGAAACTCCTAGTT
AAATTGGCCTGTTTACGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 853>:

GNMPI35TR gnm_853

15 CTGGCCTTTGCTGTTGCGGTGGGGTGCCCGATGATGATGTGCCCCCGTCGCCCGGT
GCGTGGCACGTAGGAGCGTTGTCTACTCCGTGCTGTTGATGAGTTGGCGGAAGCAGG
CTACCCCTCCCCCAATGGTGGTATCCCGTGGTGCTGGGACATACGGGGCTGAGACAGA
TGACGCTGGGCGCGTCCGCGCCCGGATAAGCGTGGGTACCCGCTGGTGGTGCCGTTGA
20 AACGGAGGCCGACGCGTGTGGTGGCGCCCGTGCCTGGGACCGAGGAGGGTGTGGTGGGA
CGTTGCTCGAAAGTAGGTAGGTGATGGTGGGACCGCGTCTGAAGGTGGCAATGGTTAGTT
TGAGTGAGGTGAGGATGAAGTCSCTGTGTTTTAACTTCGTGGCCGTGCCTTAAATGGCGG
GGCGTGTGGCGCGCCGATGGTCCCGGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 854>:

GNMPI36TR gnm_854

25 CTGGCTTTCGTAGCGTTAACTTAAAGTTCGCGTGTGAGATTGTTGGCCGTGGTAGAAT
TGGTACTGTGGGCGGTAGGGAACGGGCAACTGCTGAAAACAATTGGTAGGCCGTTGTAA
GCTCGCCCTACTATGTTGAAATTGAGTACACTGATAATGAGGCCGCTGCAGTTGAAGTCG
TCGTTGTGCTGTACAAAAGTACCCCTTGGCGTTGGTCTGCGGAACCCCTTATAACG
30 CCCCCTACCCGAGAGGGGTGCGAAGTACGAGGCCCGCCGACGCCGATGATGCCGTTAGCC
CCCGTTACGGTAATTATCAAAGTGGCTCGTTGTGTAAGAAAGGTGGGAAGTCGGACGATA
CTGTATATCCTGGTGTGAGGCCGATCGACGGGCGCTGCGCATGCTGGCAACGATGGGG
ACGTTGAATCTCGTCCCGATCCCCCTAAAAGTCCCAAGTTCTCCTTAAGTTCATGTTG
TGACAAGAACGACGGAGGAATGGCCCGTTCCGCTGAAAGAGGTCCCAAAGACACAGGGA
35 ACATTGAGCCCTGGGCAATCCTGATGCAACGTGTGAGGCCCGGAGGGCGGAAGTAAAG
TCCCTTAAATGCCGACGTTGTTGAAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 855>:

GNMPI37TR gnm_855

40 TATTTAGATACAATGGCTGTGCCCTACTCCAAGTAGTATTATGGTGTATACAACTAAGGT
CATGTTGCTTAGTACCCGGCCGCTGACGTCTGAATAAAGGTTAGAGTGAGCCGACGTTG
TTTAATGGGCTGCTATGTTTGGCAGAGGAAGCAGTTTATAACGTTATGGTGAAGAAG
GCTGTAAGTAGGCCGTTGGGACGGAGCTGGCGCCGTTGAAAGGCCCGCAGAAGACGTCG
TTTAAGCTCCGAAGTACAAAATGCGTGATGTGTGCATTGGTACTGATGGTGGCTAGGACG
45 AATAAGGTCCTAAATAATAGGTTGAAGCGACATTAGAATGTTACTACTGTTCTGTTTGA

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ACTAGGTGGTCTACAACGCGTGTACATTGATCGTGAGGGCGGGTGTATTGCTGGTATGG
GAAAGGACGGCGCCCTGTTGATCCTCCAGTAGCGCGTAATAGGGCCGTGGTACTGATA
GGGAACCGTAGTCCGGCGGCAACTATCCTGGTGGTGGCACCGGTAC

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 856>:

GNMPI38TR gnm_856

ACTGAACTTAGTTGTAGGTGATGTGGCAAGTACGGTGTATAGCTCTTCGTACACTTAGT
GTGCATAGACATGGATGGACCCTCCTAACTGGTAAATCGCGGCAACTGGTAAGTTACTGG
10 ACGACCCTCCTTGAAGTATTGATGTAGCAAAGTCTGGCGTGGCCGTAGGCAGAAAGGACC
ATTGTTCTTGCCGTTGTACCGTCTGGGTAAGACCGTGGATGGTCCCAGGTAGGGTGGTG
GTGGTAAATGTTAGTCCCCTTTGCACGTCCAAAGCGTGGCCCGACGACCGAGCTTGATA
GTGGCAAGCCGTACGAAAAAACTGGCAAAGACGAACACAGATTGCCACCACAGTTCAATC
GTCCTTCCAAAATATGGATAAAAAATCGTATTCTTGATTGTAAAAACGTTGCTCGAAGGC
GTAGCCCTTGCCCGCTTGGTGGCCGTTGCTGGGTAGTTGGGTGGCCCAACTTATCCTGTT
15 TGTGCACCGCTGGTAGCTAGTAGATCGCTGCAACTGGTAATGCCCGTTGGCCCGAGCCC
GAAGAATTAGTTTGTATTGCAAGGACTGTCCCGGTAGCCCTTGGAGTGTCCGGTAAACT
CCTGCCGATGGTAATGATCCTGTTGTAAGTGGCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 857>:

- 20 GNMPI39TR gnm_857

TCTGGCCTTTGGTGCCGGGTACTACTAACCTGCTGAAACTGCGTAACCTGCGGGTGGTGG
CTGTTACCCGGATGCCGCCCCTGATGAGCATCCTGGTGGCGTGGCTGACGAGCCTGGGGG
TAACTAGTGGTCTGCTATTTGCGATGCCTATAATAACTAAACGTGGTGGTAGTCCTAGTG
TGATAGAGGTCTGGTAAGGTGTGCTGCGTTGTCCCTGCGTTGGCCCGAAGCTACGATGA
25 TCCTGACATTGCGTGTTGATAGGTTGCTCGAACACTGGGACGGCTGGCGGTAATGATGA
TGTGTGTGGTCCCATCCCCGTTGTTGCGCTGGTAATGTGTATGATTACTGGCCCGTTGC
GGACGCTTGTTAAGGTCCCCTTGGGTAGGTGTGATGAACCTAGTTGTGTTGGAATAACA
TGATGAACCTGGCTACGTCCCGAGCCTTCTCCTGTCTAATGTCTGTGCTCCTGCCCTTAG
TACACAGGGAACGTTGCTCCCACTGGACAGGTAAGTCTGTTGATGGTCTTATAACCT
30 TCGCCCGCTTCCGACGACACCTTAGTTTCGTTCCCGGCAATGGGGTAGATGAGGACGCTCAA
GAACCCCCCCTTACAGGGCCGTCCTGGGCCCGACGGCCTAACTAAGTGGACGTTTCTC
CTAACACCCTAGATGGTCACTACCCACCCTCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 858>:

- 35 GNMPI40TR gnm_858

CTAGTCTGCTTCCGCCTACACATCGTATACTGCATTGATGTGTTTCGCTGAAAAACAA
GTGCAGGGCCCGCAAGCCGCTCGACGTTGGACACGTGGTAGTCCGTTGCTGCCAACTAAT
CGGCTGGACATACTTCGTTTGTAGATCCAACCTTGCATACAAAACGTGTACTGCTCTC
CCTTGAACGATGAATCTGACCGTGGGTCTGCTTTGACGAAATACCCCACTGATTGGATG
40 TCTAAGTTGCACCTCCTTGAAAGTCTTTGCCGTAATCTGCGTACAGTGGGTGACGTAGCT
CGCCCGAGGAACCCCAAAACACTTCGTCTTCGTGCTCGGTCTACCACTCGTATTAGTTGC
CTCCCTTATCCGTTGTTTGCTTAAACATATCGGCAGGGCCAATTTGGGCTCTAAAACAC
CCTCCACTTGTATCTAAGTTCCTTATAGGTCGAAATATACCACTAGTACTAGTAGGGTA
AATGGTAGGGAATAACTAGGGCTACAGATCGTAGGCCGTTGAGCTTGCTGAGTGTACT
45 AGTAAATGGTAATGGTAGATACTAGTATGTTTTATACAATTGnTCGTTATTGCGGTGTG
TCTAAGTTCGCGCTTTGAGAGGCAACACCGCCTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 859>:

GNMPI41TR gnm_859

5 GCTAACGTCGACCCCTGGCCCTATCTACACCCCTTCCCGCTGGCAAGGGACAAGGAC
GTGGCGTGGGTCAAACCTGTATCCGTTTGTACACACAGCGGACCAATAAAAATTAGCAT
GGTGCCGTTCTGTTCCAGTCTAAAGAGAATGACCTCTCAAGGCGTCGAAGTATTAAGCGA
GCTGGCCTTGCATCACCCGCATCGCTCGTGGTCTGTGCTCCGCTTCGACCCCGCCAA
CTTATCACAAAAACAACAAAGAACTACAAATGAAACCCACCACTATACACCCCGGAAAA
AACACTACCCGTGCGACGCCCAAGTAGGCACCCCATCACCTCCCATAGAACTGGGACC
10 CCACTAAACGGGCCTGGTAGCTGGTGGATAATTGTCTAAAAACACCCCGTTGGATATT
AAGGGCCCGCTACATCGTTGAATTCGTTGGCCCGTACTTCGACGGGGCGCACTGTTCC
CCGCTTCCCAACGTTGTTATCCACACCCGTTATCCCTTTGACGAAGTTGCCCGTTGAA
AACACTTTTATAGTTCCTGTGGTAATCGTCGTGATGAA

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 860>:

GNMPI42TR gnm_860

CCCATTGGAACGAACTGCATTAAAAACGGCATCCAACCTTCGACCCTTTACTGTCGTTTAC
AGGACATCTTAAACTAATAATAGGACCTTCTCCGCTTCCCAGAAACAATCGGACAAG
20 TATTCGAACGCACCTTGCCCTAATAAC :CCGAGGACCAACGCCCCGACCCAAAGCATCTC
CATTCCTAACGCAGCCCTCACGCTTCGAAACACGCCCTTCCGAGTCTTACTACGAACCC
CAGCTTTAACAGACCCCGTCCCAAACTAATACCGTGGGCCCCGAAATACCTCTTACTCA
TAGATCGAGACAACCTCCGAAGTAGCGCCACGTCCGAGGAGCTCGAGAACTTTTATCAA
TTGTAGTTCCTTTTGGCCCCGTTGTTCCCGCTAGGCCCCCGATCCCGGTAAATGGTAGGA
TGCCGATTAGGGTCTGATGGCCCTGGTGGTACCGGGGCCCTTCGTAATATCGGCTAA
25 TGGTCTGTTTGTGTCGACAAAGGGGCCGAGTGTGTTGGTGGTATGTTGCCGACAAATC
TTACGTCGCCGTTTAAATGGCTGAGTCCGGTACCGCGTCTGAATACCCCTCGCCGGTCC
TACTGGTGTGGCTGGAGAAACCGTCGTTGAGGCCGTCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 861>:

30 **GNMPI43TR gnm_861**

AACTAGGATGGACGGCTACATGGTACGGTCCACCTTGCCCTTTAAACCCTGCGTGGAAC
GAAATCTCTGGTTCTGCACCGTTAAAGTACCGCGCTTAACCTTCGAAGTCGTTTGAATGA
AC

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 862>:

GNMPI44TR gnm_862

CCGTGTTTAGCAGCGGGCGAGGCAGAAAGGTCGTTGTGGCCGCTGAGCCTGTTGGTCCCA
TGCCCAGGTGACCCGCTGCCTAATAGTAGCCCCCTGGCGGTCGTAATTAAGCGCTGGTG
AGGATCCGGGTCCCGGTACCGTTGGCCCCCGTGTTAAACGCCTAAATGACCTGGTGAGC
40 GTGAGGAACCTGTTTAGTGAGCTTTAGTGTAACGGCCCCCTCTGAGGAACCGCGGAATA
CGCCCTGGCGTAGAATTGCTTGTGTTGGCCCTAAATACATTGTTGTTGCCTACTAACGGA
ATGACAGATAGTACCCCTGTGTCCGCGTTGAGCCTTAAACCGGGAATAAGCTGGCTAGG
CAGCTGTGTAAGATACCATTGGCCATGGAGACGGCGCTCCTGTGCCCCCTAGATGATTT

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AAGTCGAATCCGGTGGTCTCCTAGGAGTGAGGATGTGGACGCTGAGGTTACCGGCACTT
AGCCTGGTAAGGCAGGTCCCAATTCCGGTGAGTAGGTCTCCGCTGCGTGGATGGCCCTG
CTGAGTTAGAATATGGTAGGTGCGCC

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 863>:

GNMPI45TR gnm_863

10 TACCCCGCCAACCTTATCACACCCTAAACCTTTCTCTCCCTACTACCACCCAAACGTCACT
ACCAACACAACCAATAAAACCTTACCCTTACATATTGACGCAGAAGAACAATAAACCAAC
TCACCCACAAATCTTGACCTCCTTCTACTGGGCCACATCTACTAGAAACATCTATCGAAA
CACACGTTCCCATACGGAAACTATCAGATAGCCGAAAAGTAACTAGCTAGCCTTCGCC
15 AAAAATGTGCGCAGAACCTTGTCCCACTCTAACTGGATATGGCCCTAACACGCTCCTTT
TCCTAAACATTAAGTCTAAATTCGGCTTAGTTGACCAATTCACACTTCGATTGCCGTTG
GTGTGATCGCTGGCCCTGGTGTGATGCGGTGCCCTTTGCACCCGGCTGGCGAAAATGGCG
GCGTGTGCACGCGCCCCACCTCGCACTGTGACGTGCGCCACTGGTACTTTGACGACCCC
20 GCGGAAAACGCTACTGGATGGTGTAAAGGTGCGAATGTGTGCGACGTGCCTGGTGGTTT
GACGAATGGTAAATTTACCGTTAAACCCGGAAATCGGCTGGTGGACGGGTCGTCTGGT
GTGCCTGGTACTACGGTCCACCATACG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 864>:

20 **GNMPI46TR gnm_864**

CCCCGAAAATTGACCTTTTCGTAAAGTCGTCGCTCGTTGCTGAAATGTGCCGAAGCATG
GCGTGGTGTAATTGAATGGGGTTCGCACCTGATAAGTCGGGTAATAGCGTGGTGACCTAG
GAAACGAATTGCGAGGCAGGGTTCGTGGCGAAACGCGTTCTCTTTGCATCCCCGATGGGT
25 GAGGTGGGCCTGTTGCCGAAATGGCGGTATGTCAACCTTACAAAAATGGCATGTTGCGG
GCTAGTTTGGTAAGGCTGAACACTCGACTGACACGTTGACGGAATCGCCGTAGAAGGTG
GAGGGTGGTGCCCGCACGCTGGTGATACTGTTTAGCATAGTTGTAATACTTAAGTTGGC
ACCGTTCCACCGCTGGAAGGTGGAATATTGTTGTGCTAGGGCGGCTGTACTGGGTAGT
AGGGTGTAGGCCTAGATGGTACCGTTTCGTGAGGAAAAGTCGGTGGAATCGTCGCTGGAA
30 CTGGCTGCTTGACCTTGTGTGTCGTGCACGTAGTACGAAGATACCTTTCTTCGACATAG
GGGACCGTTTCGTAAACGCGGTGGAAGTTAAAGACCGTGTTCGTTCTACCTAGCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 865>:

GNMPI48TR gnm_865

35 CTGGCATTTTGCTGCGGTCCCCGTGGGCCCCACTGGCAACGCCCTAGATGGTTCGCTTA
GACACCTTGCTAAAAATTGTGTTTACCTGTTGCTCGAAAAATGTTATACTGCCTAGTTGTC
GTAATCGTGTGTGTAGGCCCTTAGTAGTTCGTCCCGGTGCGCTAAACTTCCGTGGCACC
TGCAATTTGACCTCGTAAACTGGTGACCAATCTTGTCCTTAATTGGCCCTTGACCGGC
AGTCGTTTGATCGCCTGACCCCCCTACACCGGCTGAGTATGACGAAACCTGGTGCCTAG
TGACGGGCCCCGGCCCTGAGGCCTACGGTCCACTCTCCCGCCTACTACTCCGAAAAAACCC
40 ACAGCCACTTAGTAAGCGCCGTAAAGTAACCCGATAGCCCTCCGCTCCGCGCGCCGG
TCTGGTAAACGTTCTACCAGACAACGCAAGCATCCGCAAGCCAACAACATGCCGAAA
ACAGCCCTGCTCGTCGCTCCTGGGTAAAACACTAGATTCCCGTCCACAGTTCAAAAAACC
AGTCGCCCCCTACATAGGCCCTCTAGTAATACAAAACGAAATTGCCTCATTCGTCGACC
TCTGACAGTCCCCCTAACAACTCTCCCCAAGCGAAGGCGACACGAAAAATCCCCACCGGA
45 ACTATTCGCCCCCTAAGAACAATAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 866>:

GNMPI49TR gnm_866

GGGTCCCCGCCTCCCACGATAATCGTTACTCGCTGGGTCTTGAGCTGCTTCCGATGCTTG
5 AAGAGCCGTACCATGGCGCCGCGTAGAAGCCCCAGAATGGGAGATTCCAGCTTCGTGCAA
CTCGGGGTACATCCTAGACAAGTAAGGGAAAATTCATAGTAGTCTGCTAGACATCTGCAG
AATCCTAAGTACCTGCGTCCGATCCGTCAATATCTTCTTCGCGTTCCTACTACTGGCTG
CTGCGTGGGCAGCTTGCTTCTCTGCGCACTTACTGGGTAAAACCGTCTTCTAGATCTG
10 CATAATCCGTACTATTAAATTCAGGAATATCCGAGTCAATTACTTGCGAGTCAAGCTTAC
TTACTTCTATGGTGCATCCTCCGTAGCGATATGCTTATCTAAATTCTTTCGTCAAGCT
ATTGGTTTACTGGGGCTTCCCCTGCAGGCTTCTCTCAGGGGCGCGGGCTTCAATCTTGG
CTTCTGCAAAGATCTCTAAAGAGTCTAATTTATATTAAATTTAGTATCCTCACTACTCC
TACCCTAGTAGTCCCAGCTCCCTCTAACCAGATCACTCTCAATTAAATCTAGCATTAC

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 867>:

GNMPI50TR gnm_867

TCCTTAATGCGTTCTTCGAGTTACTAGAAGTGTCCTCAAATTCCTAAGAATCCTAAACCGA
CTCGAGTTGCAGGCAAATTTCTTTATATGGGCTTCTACTTCACAGATAGGCTTCTTCAGC
20 TTCTTAAGATCCCTCTCTTCTGTAGTTTGCTTCAGTTCTTCATGATCCTCACTCGCTTCA
AACGTTTGGGCGCTCAAGTGGTTCTATCCCTGGGCAAATAGCCCCAAATCTAAGCTTC
GTGCACTAGTGCCTCCTCCTGTGTCTTGCAAACAGCAAAATCCCAAATAGGCTTTTGT
TAAGTCCGGAAAAGAACCTGTCAAATAAATTCAGGTGATTCTTCCAAATTCAGGAGCAA
AAATAAAATTAAACGTGCCCATTTGTTTTATTCTTGGGGTTATGCCTGCTGGCTTCTCGA
25 TTGCTTTGGGAGCGCCGAGACTCTCAAACCTCCTCCTCAGAGCTGCTAAGCCTATATCTC
TCGTCCCTGCGGTCTGTGGGGTTGCTGTGCGAGGGTCTTGTGCTGCCCTAGGGCCCTAC
TCAGATTCTTCGGGGGCTTCGGGTCTGTTAACCTGCCCTACCTAGATCT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 868>:

GNMPI51TR gnm_868

TCGGCTTAAATATCTTCTTGGTCGCGGTCTCCTCGGTTTAGGGGTGATATTTGGCCCT
CCATGGTTTCTGGCATCCTAATTTCTAAACTCCTTGCTGGCGGTTTGATGCGTTCTTCC
GGTCCATCCTCGGGTTTGGGTTTCGGTTTGAGGAGGGTAATTGGCTTTTAAAGTGTGAGCT
TATCGGTCTCTTTACTCGCAGTCTCAATCTCCTCTCCGTGGGCATCCCTACCGATCTGA
TTGCTCCTTCCAGGAGCTTCTTACGTTCAATGCATTGCCTGCTTCTATCATAACAAAC
35 TCCTACCAAGAATTCTGAGTACCTCAAAGCCTACTAGTCTATCATAGGGTTTCATATCTG
GTACCTCCCGCGTCAGGGTAATTAACGTGTTCACTCTCCTGATGATTCTCATGGGGATCC
TAATAACAAAGTCTTCTAATCGTAATTGTAATCTTTCGCGAGCCTGCCAGGAGCCTCC
TACCTCCTCCCTCCTACTTGCAAGCTTCTTGGGTCCGGTGCAAAGATTACATCTGCCT
AAATTAAACTCCTGATAAACATAAATTCGAGCTTTGTAGCTTCTTGGGTCCGTACGC
40 CTCGAAAAATATTCCTACCCTCTAAAGTCTCGGTTCTATAAGGGATTTCAGGTACTTA
TCATAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 869>:

-870-

GNMPI52TR gnm_869

5 TGGAACTCGTCCATAGGGTTCTCTCTCTGCGCTTCGTGCAAATCTTCTCTCCCCAGCT
CCTGCTCGGGGTTAGTCAGAACTAGAGGGGTTCCATCTCGGTCCCCCTCCCGGGGTTTCCC
TCCTTCTTCAGGGCGGGCTCTGGAGAGACGCCAGGAATAAAAAGTACCATAACCTCATCA
10 ACTTCTACATACGATAAAGACGATCCAATTCAGGTATGGCCGCTGGTACTATTGGACACA
AGTCGGTGTGGGCACTGAACCTCACCTAATCTTCGATGCCGGGGCGGAAGTTATGAGAA
AAAATATGCTACTAAAGTCGGGAAAAATAACTCGTTGGGGGTCCGTCCCTCCAAGATCCT
ACCCGTCGGGGTTACTACCTTGGGGGCTTGGCTTCGGGTGAGGGCTCTTAGCAGGGGCCT
ATGTCCGATCTTTCGCTCTGTTGCTAATAGTCTCCTCCGATCTTCGTCCGTACCTCTAC
15 CCTCGGTAGTAGCAAGGTCAATCCTAAAGTGGTCTACTCATCCGGGGCTCGGTATCCT
GGTATGTCGGGCTGGGCTAGGAACCTCACCGACGTGCGCCCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 870>:

GNMPI53TR gnm_870

15 GCCCTCAAACCTATCCGAAAACAAGTCTTGAGGGCCCTACTGGTCTTAGGGATTAGAGTA
ACTGTCTAATCCCTCTCGTCGTAAACTTAACGTTTTCTTTGGATGCCGAGCGCTCTA
ATAGGATATCTTTCATGGCCCATCAATTCGTGAGAGTACTGCCTTCCAAAATTAATTCA
TGTTCCGGCGGTTCCGGCAGGGAACCCCAAGCTAAGCAATTGGAAGAAATGCAAAAATAAT
GCCGTTCTTCGATCCCTACTCGCTCCGAGGCTTCGATTCGAGAGGGCTGGGGCCGCT
20 GCTGGTGCAGGTTCCGGTCTTAGTCGCTGCAAAAGTACTGGGCTTCAATAACAAAGTCTTA
GTTTCTTCGGGATGTTGGGAATCATCAGTCAGCACCAGGGCCCGTCGTGCAAGAGGCTGC
GTACTGATTAAGGAGCTACATAGTGTTAAAGGGGGCCACGATCTGTAAGCTCGGTC
CTCATCCGCAAAATACTAAGAGTGAGTGCAGCATGGAGGCCGTGTAAGGAACATGCTCT
GCATGATCATCCGAAGGGCGTGCTGCCGTCCGGAGTTCATT

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 871>:

GNMPI54TR gnm_871

15 TAAACTTGGCAAATACTTTCTCTCTTTCAGCCGGCTTAGTCGGCTTCTACTAAACGCGT
TATTAAGTGCATTAGTTGTCAAGTCTGCCTCCATAAACGTCATTAAATGATAGTCGTCTCC
30 TCCGAGTCTAAATATTGGTTGCGGCCTCCAACTAACTTAGTCTTAAAGTGGGCCTCCA
ATATCAGGGCCGCCAACAAGTTAAAAAAGGAGCCTCAAAGCCTCTTAAACCGTGCGCT
TCTGCTTCATTAGCGCTCGTCGGCTTAACTTGGGCTTCTTCAAGTCCAACTGCGCCGCA
AACATAGGCTTCTTCAAGTCCAACTGCGCCGCAACATAGGCTTCAATCGGCTTCAACATC
ACAGCAGGGGCCATAGTCCGTTCAAAGTTCTGCTTCTCTGGCTTCAAGGCTGGAACTTC
35 TTCCGATCCGTCGGGCCAATCCCTTCCGCTCCTCGCGGTACGGGCATTAAGGTCTACCTC
CGATCAAACCTTGGCTTCAACTTAGGCTTTAACTAACTCGGTGTCAGGCTCCCTCCTC
CTCATATCTGCCTCCTCAGGCTTAAAGTCTCGGATTCAATAAAGTCTGATAGTGGTA
TTCCTCTCTCTCGGTTGGCACGGTGG

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 872>:

GNMPI56TR gnm_872

15 TCCGGTCGTTATAAAGAAAACCTCCGGGTAGCCTCAGGATCTCCCTCAGGGTCATCTCTTC
TTCCGCTCTTCTCCATACTCATCTCTCCCTGCTCCTCGAACGCGTTAGAGGCACCGT
CCTCACTACGGGGGTGAGGGTTGCGTCAGGGCAGGGGGAGTGGGCCGGTGCAGGGTTAA
45 CAGCCTCTCCAGCGGGGCGGTATCCGTAGGGGCTCCAAGAGTCACCTGGTTGCTCCTAC

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CGACTTCATATTCACCTCCCTCTCGGTGCGGAGCCCTACCGCCTCTAAGGTGGCGTTCGT
GACCCGGATCTGCTTGCTCGTCCCTCAGCACGTTTCATAAGTAGCGACAACGCGCCG
GGGATTTCTATTCGGCCCTTTCACTACGTTTCAGCATGGTCTTCTGGGTGAGGTCACCCA
CAACTGGGGAATCATGGCCTCGGGGGGCAATGGGGGGCTACCGGGGCAATAATAACCTC
5 CTGCATCGGGCTATGTAGAAAGAGTGTGGTAAGAGTGGTCCGTCCTAGAGCTTCGTTCAA
TTCCCGGAGAGGGTACATCCTAGGGGCCAGGAGGTCCAGGGGGCTCGATGTCAACCTG
CCAGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 873>:

10 GNMPI58TR gnm_873

AGGCCTCTCnAAnAAAnAAAGTTGTCTGGGTCTTCTACTAGTAATTACTTGCTTTTCTGT
CATAGTTCTCGTAATATGGGCAAACCTAAATCTCAGAAACGCTGCTTCTGCGGCTAACTT
CAACGCTTCAGCTACACCTAATCTTGGAGGTCTTGGCCCTAGTTCCTTGCAAAAATAAA
AGTCTCTGGAATAAATATCAATGCGGGGGACATCCTATATGCCAACGTTAACATCAACCT
15 ACTTACTGCTGGCTTGGAGGCCGCCCTCTAAAATCACCTCAAAGTAGGCGTCAGGGTGCG
CTTCCGCTTCCTCCGAAAATTGGCCTGCGTCCGCTCTAAAGCCTCAATAAACCTACAAGT
GATCTTGGTCAGAGTCTTCAAAAATCTTGGCTTAATTGTAATTCTCGAGCATTTCTCTT
CCATGCATTAAAGAGTTATTTTCAATCTAGTCTTCAATATCAGCTTTCGAGTCTTTCA
TGCTACCTAACTTCATTGCGCGGCCGCCATCTCTTGTCTGTTCCGGGCCCTATGGGA
20 TCTTCTAAGTTTCATTGTAAGATTCTTAAGTTCTnCAATTTCGTCTTAATTGGGGCCAA
TACTAATACTAGTTGTCAGCTTC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 874>:

GNMPI59TR gnm_874

25 ATTATTCTCCTTCGATGCTTGAGTTTGTCTGCGTTAGCGGTAAACTTCGTTGCTGTCCAT
AAGCCTATACTTGTTGCTAGTTTCAATGTCAATATACTTGTAGGATTTCTAGTCAGGGTA
ATTGCGGGGCTTCGGGGCATCAATGCACTAGTTTTAGGATACTATTGGAGCTTCTGATT
CTAATTCCTGCCTCTAACATAAGATTGCGTGCAATGCGGCCAATGCAGGAATCTTAAT
GCATTCAAAAACCGGAAAAAGACACAACTAGGTCTGCTTCGTGCGCATCTTATTAGGA
30 GGTACATTTCGTCTCTAATACTCGTACCTTAGACAACGGCATCAACAACCATAAAGTA
CTCCGTAAATTATATTACGAACCATACTCAGCTTTCGGCCAGAAACAAAATCCnTG TG
ATAAATGTCCGATAAATAATAGATTTGATTTCAGCTACAACTGAGAGTCACAAATGCT
ATAGGATTTTTC

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 875>:

GNMPI60TR gnm_875

CTCCTCCTAACTTCTAAAAGTTTTCTACTTCTTGTAACTTCCTCATTGTCGAGGTGGT
AATATTCTCCTCTATATTCTGATGTATATCGTCCATGTGATAGTCTAATCCTCAAGGT
AGTTAGCTTTTTACTACTCTAAAATTAGTAAATTCAAAAATGTGTTATATTGCGGGAT
40 CTTAAAAATGATTGTCCTCTATAGATGGGGGGGATACAAGCACTTCTTTCTTCTTCTC
TTCCAAGTCTCTAAAAGCTTCTTGGAGGTCTGCGGGTCCGTACTCAGCACAATATCGT
CAAAGAACGTCCCAACCGGGGCGCCGCTAGGGTCCAGTCGGCAGCATCATCCCGATCTT
TAATACTCAAATTACTCACAAATATAGTCTTAGCTCCGCGTTCGTGATCGCGTCAGCAT
CCTCGTCCCGGTACTCGGGTCCCTCCCGCAGCGCAAGGCTGGTCTGGTGGTCATCAT
45 GGGGCTTTTTCACGGGCTCTAATGTGCGGCTTAGGCTCCTCAGTCCGTCCGGGTGGGCAT
CTCTTATCAATTCAGCGGCTCTACTCGCTTACGGGCTTT

-872-

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 876>:

GNMPI61TR gnm_876

5 AAATTCTGTTCTTCGTAGGTTTCTCTACCTCCCAAGTGACATAGGTAAGCTGAACCTAAG
GGAGTCCCAAGCATGCAAATGTAAAAATGACAGGTTTATGGGTCGCCCAGCATCCAAG
CGACCGGTCGCCCAGCATCCCAGCTACCGGGTTCGAGCCAGCCAGGTCGTAGGTTTCAC
TACATCCCAGTGACATAGGTAAGCTGAACCTAAGGGAGTCCCAAGCATGCAAATGTAAAA
AATGACAGGTTTATGGGTCGCCCAGCATCCCAGAGACCGGGTAGCTCCATCTCGGTCC
10 AGGTATCATGCTCTCCAAAGCATCCCAGGGGCCGCGAGGTTTGAAAAAAGAAAAAATA
GGGCTAATGGGCGGAAAAAGAAACCTGCGCGGGGAATCAGCGCGGCAGAGGGAAGGTGAC
AAACCGACTGAGGGAAGACGGATTGGGGTGGAGGGAAGAACTGGGTGTAAAGGTTAGC
AATCTTGTAAGATCAGAGCTACAGCTGTGAGTCAAAGGAACGGGTAATAGGGGCGGGAGG
AAATAGGGGAGGGGACTTAGGGGTAAGAGATTTTAAAGAG

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 877>:

GNMPI63TR gnm_877

GCCTAAAAACCAGCTCGGGCTACAGTTGGGCGTCCCGTCCCAACCCGCGGGGCTACTCCA
GGGGCTTGAGAAGCACACCCAATCTAAATTTGAGTCTCCAGCTTCTTCAGATCCCGGG
20 GATAGGAGTCAGCTTCGTGCAAACCCGGGGAGTTCGGTACCTAGATCCCTCTCAACTCC
ACCAGCCGCTCTCTACCATCAGCACGGGCTTCGCAAACAAAGCTCGCCAATTCCTCAGC
CGAAGCATCCCTAAAGTGCTCCGTTCTTTAGGGTACGCTGGGTTTCAGGGTCATCATG
GTCGTGGTTCTCTTCGCGAGTAGTACTCGGGGCCTAATCGGCCAATCCTCCATCCGGTT
CCATCCGTCCGAGACGCTACATGTTCTCTTCAGCACTACTAAGAAAGTCCGCGCTCT
25 CTGGCGCTCCTAAAGCGCCTCATAGAATTCTTCAACCACAACCTCCAGAACCTAAAGGTC
CCCCTGGTCCCCGCGGCCCTCTCCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 878>:

GNMPI65TR gnm_878

CTTGGGGTTCATAGCTTGGTTCTTATAACTCTCGGCGACTTCTTGGTCATACAACTTCGT
30 TAATTGGGCCGGGGCGACTCGGTTCTATCCGGGGTAGTAGGCAGCTCCGCGGGCAAATCG
GCCGAGGCTAATTACTTCGTGTAAAGATCTATTTGCGGCGGGAGTCTCTAATGCAGCTTA
TCTACTAGAAATATTTTCTTAGAATTAGATAAAGTATGCTTGCTTCTATTCTTGGGCTT
CGGCATGCAGCTCGCTGCCTTCCTTTGCTTCTTTAGTATCTTCAGGCTTACGTCCTGCTT
GGTAGGGGCTTCGATAAAATATTGTCTTCTTCAGGGCTATCTTGGGCTCTTATTTGATCT
35 ACTTCTCTTCTTTTCGAGAGGGGCGAGCTCATTCTTCTTCAGCAACTCTACTTATAAGGG
GGCATCCCATCCAGTCCTCCTAGATATCGTCGTCTTTTGGCTCCTCCTATCTACTTTAA
TAAACGAGGGCTTCTAGAACTTGCGGCCCTAGAGAAAATTCTGGTCTTGTCCCCAGACT
TAAATCTGCTATCTTTAACTAAAGTTCTTGGTCTAGGCTGGCACTAAGAAGGTCGATAC
GTTTGCTTCCGAAGGGGCGGGAATCTAAATCAATTCCAAGTTCnTCGGGGGCTTCTAAG
40 TACGGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 879>:

-873-

GNMPI66TR gnm_879

ATATACGAGCATATAGAACTCGTAAGTCGCGGGCTTTGCGGGGCCAACCCAGGCAATT
GGTTAAAGAACGGGGCAGGTGATTCTTTTCACCCATACAGCGTTAACGCCTCCCCGGTA
ATTCAGAACCAAGGGGAAGTAAAGACAAGTAACTTGCAGGAAAGGGGCGAAAGCTCCTA
5 GGGTACATCCTAGGGGAGCTTGGCTTTGTTAGCTTCGCAGCGGTGAGCCTAAAATTCTGG
TCCTCCGACCTCCGAACTCGGTCTCTCTCGTCCTCACTGTGGTTAACTGCGGCTTCATC
AGGGTTAAATCTCTCTCCCTAACATTCCACTCCGCGGTAAATTCGTCCATACCGGT
AAAATCCGTAGCTTGGTCCCAGGTCCCCTACAGGCTTCTTACCTAACTACCATCCAG
CCGGTACATCCTAGCCTGGTGGTTCGGGTTAAAGGGTCGCTCCAAGCAAATGTGTCCTT
10 GTCGAGGCTTAACTAGGGGCGTTAAGGTTGCAACTGCTTCAATCAAGTCCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 880>:

GNMPI67TR gnm_880

GGGGCTGCTTTnTCGGGGTAGGGCCGGAACCTCAATTAGTTAGAGGGACAATAATGGAAA
15 CGGTTTAGGGGGAGTAAAAATTGTGAAAGCAGGGGAGCGGCCTTAGTGAAAGAAAATTG
AGTATTCGGGGGAAGAATTTGGCCGGGTGGGGGATTAACAACATACATGCTTTGGCTGC
TCGTCCAACCTCGGCGTGGGGTGCAAAGGGCACTTACTGCGGGGTAAACCAGGAGGGGG
TAGCGAGCGATGTAGAGGTCCGATACTATTGGGAGGACCCAGAGAACCATCAGGGGGGGT
GAAAATGGTTGGCATTGGGGCGCTTCTGGTTTTGGGAGGACTCTCAGGTACTGTGCGGTT
20 CATCATAAGAGTAAGAATCCTGGGCCCTAGTCGGTTAAGTTAAGCGGGTCGTCAAGAACCG
CCGTACCGGCGTCTCTGAAAGGAGAATTGGTTCGTGGGTAATCGTGCGGGGAAAGTGTGAAT
CGGCAGGGGTTTCGGGGGGAAGTTGGGGTGCTGATTGGAGAAATTATGGGGCTACTACG
GATAATACTGGGAATTCTAGGAGGGGTGATTCTCGGGGCGCTCCGGGCGCTACTACGAGG
CATAGTGTTGTTTCGGATCTTGCTAATGCGATTGCTTCTAACGGGCCTAGACCTCCGAAG
25 G

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 881>:

GNMPI68TR gnm_881

CGATCTATCCTCCGAATCAAGTTCCTCACCTCTATCTGCGTGGCTCCTGGTACATCCGTG
30 AAGGGCCGTCCGCTCAGGGCCTCCATGGTGGCCCTAGATCCCTTCAATCCCGCCTTCCAT
ACCGAAACTTCAGCATCCGGGGGGTGGTCTCACGGGGGTTAGGTCTGTTATAGTCCT
CTCGTCAGCACTTCTATTCGGGTGAGCCTCGTGGTTAGTAGCGTCAAACTTTCTTTGCA
GGCCTCGGCCTCCTGGGGGCGTCTCGGCGTTAGACTCACCGTCAGCGGTCTTAACACT
AGCCTCTCCGGCCCGGTGAGTGCCTCAATCTCTTCTCTCGAGTACCCTTGTCAACCCGC
35 TCCTCCGTTAGCGCGGTGGGCTTCATCTCTGTCTACAACGTTAATACATTCCGAAATGGC
TTCTTCTGGGCTTCTCTCTCCGAGCCAGGTCATCCTCCTGGTCTTTTCGCTTGGGAAGT
CTCTTCACTCTCGACTCCAGGGGTAGCGTTCAGATCCTCGCAACTCCGACGTCCAGGTC
GGCAGCGTCCCTCCTACCAATGTAAGCTTCGGCCTCTCCTACGTGCGGACAAAGCTGGC
ACTGCCGTCCGCGGCTTAAGGTCC

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 882>:

GNMPI69TR gnm_882

AATACTCTCCTCTGGCTAAAAGAGCCCCAACAAGTGGCAGCTTCGGCCGCAATAGAGTAGG
AAACTTCTGTACCTACATCTGGGCGTCTCTAAGATCTTACTCCGGCTCCAGAAGCCTGGG
45 AAAATCCGTACAACTGCCGTGCGGTCGCGGGGCTCTTCTGCGAAAATCTTATCTGGGT

CCTCGCCGTCTCTATCTCCAGCACCCAAGAATCCGACGTCTTCGGCACGGGGGTCTGGGGT
AGAAGGCGAATCAAGTAAACCCGGCTTGAGTTATAGCCTCAGAAACCGTCTTAAAAGTAT
AAAGAGAGACATAAATTAAATCAGCTTCGCTCCAAGCGTCAACTTCAATATCCGTACCAG
CTTACTTAACTTTTTCTAAAATAATCCTAAAGGTTACACAACGAATCATTCAAGGCATTAG
5 CTTCTCTATAAAGGTCAGCCGTCAACTCAGAAAGGTTGCTCTCGTTGCGGCCAGATCTGC
CGTCAGCGGGCTTCTCTCGCCTCCTCTAGGGCTACCTCCGACGACGGGGGCGTCTTAAC
TTACTCGCTGCGTACTATGGTCGGCACTTCTGTTTATTAGGGAAGTCTTAACTTGGCAGT
CAACAACGTCCGGCATCATCGCGGAAATCTTTCGAGTACTATTATCTTCTCGGTAGGCT
ACTAAATAGGTAAAA

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 883>:

GNMPI70TR gnm_883

CGCCTGGGATGGATTGGGTGACGTAGCAGGGAGTGTGGCCGGGGGTGCTTTAAAAGGA
CTATAACGTTTGGTGCGGCGCACAAATGGGCCTAAAAAGAGACTACAGCCGGGCGGCTGC
15 GGCGGGAGGGACCAGGCCCCAGAGAGATTGCCGGCAAAATAATACGGGGCAGAGCTGAG
CCATGCGCGGCCCTGACCAAAAAAGGGAGCAAAACAACGAGTGCTAAACATGCTTAGCG
CTACGTGGGGGGCGGCTTCCGTGGGGGCGCGTGCAGCTTCGTGCAACTACGTGTGCTATC
ATTGGGCGCTCAAGAGGGCTGATATGGCCTAAGTTCGTTAGGGGGGTGTATCTGGAGCTG
CATTGAGATTTTCTTTTCAGCTTTCATTGTTTCTTAAATTTATCAAACTTCGCCTGCTG
20 CTGCGGCAGCCTCGGGCTTGGCGGCGCCTTTCCTCGCGGGTTTATCAGGGCGCCAAGT
GCATCAATTGCTTCGTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 884>:

GNMPI71TR gnm_884

GGGGAAATAGAGGGAGGGGGTTCGGGAATACAAGAGAGTCAGGAGAGTACATCACTGGGCA
GGCTTCCCGGGGCTGAGGGGGGCGGCGAAGAAGTAAAGGCTATCGGCATGAGCGTGGGTG
TCCGAAAAAGAGAATCCACTAGGCGGGGAACCTGGGTAGAATCGGTAGGAAGGTTGATCT
GAGTACCGACTTAACCCCACTGGGAAGGGTAAAAACGGGTTAAGGGCCAATTAGGAACA
AAGTAAGAAGCCGATTTCAGGTTAAGCATAATAGAGTGGCCGAGCGTTAGTCCAGAACCAG
30 AGGGGGGGTGAATTGTGAGGAAAGTAGGTGTTAATGGTTAAGAGGTGGTAGTAGTTTATA
TTTTCTGATAGATTAGGGCTTAAGAAAGCAAGGGGTCTGATATTTGTAAATAACGAA
GAGGTTGGTGCAACGGGGGGAATGTATATAGAAGATATAGAAGAAGGAAGTGTAAAGATC
AGGGACCGGGGAGTAAAGCGATTTCGGGTGGCGGGTGGGGTGGGAAGCGGAGGTAGTCGA
CGAACCGGTGCGGCAAGAAGGCGTGGGCTTTTTCCTAAGCAGACGAATAAGGGGTTTGGG
35 GCTGGTTTAACTGGCGATGTTGAGGGTAGTAAATGTAGACATAGAGCGTCCAGAAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 885>:

GNMPI72TR gnm_885

CGTGCCAGGTTTCTTGCTCTCCCAAGCATCCCGGGTAACAGGCTACGCGGCGTCCCAAGC
40 ATCCCGGTAACAGGCTCCGCGGCGTCCCAAGCATCAAGTTAGTTAGATCCAAATTGCTA
TTATCGTAGGTTTATCCAACGCCAAGTGACAAGTTTCCCGGGTACGTAGGGTTCAGAC
AGGTTTCTTCTCGTCCCCCGTGACAGGTTTCTTGCTCTCCCAAGCATCCCGGGTACAGG
CTCCGCGGCGTCCAATCTAATGCAATTTCGTAGGTTTATCATACGCCCAAGTGACAAGTGT
CCCCCGGTACGTAGGTTTCAGACAGGTTTCTTCTCGTACCCCCGTGACAGGTTTCTTGCT
45 CTCCCAAGCAGCCCGGGTAACAGGCTCCGAGGCGTCCCAAGCATCAAGTTAGTTAGATCC
AAATTGCTATTATCGTAGGTTTATCAAACGCCAAGTGACAAGTTTCCCGGGTACGTAG

GGTTCAGACAGGTTTCTTCTCGTACCCACGTGCCAGGTTTCTTGCTCTCCCAAGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 886>:

GNMPI73TR gnm_886

5 GCTTAATATTCTTCCAAGTCTTATCAATAAATTTCTTCTCGTCTTATTACGCTTGTCTT
AAGTCCCTTCCTAATCTTCTAAGATGTAGTGCTTTCTGGGCTTTCAGAGGCAGTACCCCT
CGCCGAAAGTTTTAAATTCGCTTCAATACTTTAGAAATCCTCTCCGTCTCTTCAGCCA
CCTAAGTCTCCGTAGTTTCGAAGTAAATTCCTCTAGAAGTGCTCTTAGATGCAGCTCCAG
GGCAAGCATTAAGATGTCGGTAATCTAAACTTGCTCTACGGTCCATCTGGTCCGGGTC
10 TCCGACGCTCCGAACATGCTAAGCTTGTGGCTCTTACGGGCCATAAACCTCTAGTCAT
CCTCTCTATGGGGGTCATTCTCGTGGTACTCATAACGAGTCTCTAGAGCTTCGGGCAT
CCTCTAGGTTTGGGCTCTTTAGATACTGGCAGCTACTCTAACATAATTAAATATTA
TCGGATCAGATGTAGTAATACTAGTAATAATAATATATTAGTACCATCCAGTCTTTCA
GGTAAATATGAAGGGTAAAGGTAGAAGCAGGTTAATATGCAAAAAATTAAGTAAATAGTT
15 AACTGCTTCTAAATTCTGCTCCTAATCTTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 887>:

GNMPI74TR gnm_887

20 GAGGGCATGGTCATTCTTAGTGTTAGCGGGGTAGGTGGCCACTGGTTGCGGTGGGGACC
TCCATAACAAGGAGCAATTTAAATTTTGGTTCGGGTTCTTGCAGGATTGGCATCAACGA
ACGAGCTTAAGTCCCTAATCCGTACAGGCGACCTGGGCACTCCGGGGCCGGGCATAATCCG
GGGCTCCATCCGGGCCCCGGTGCTTCTGGGTCCAGAATACTTGCTGGTTTCTGGGTAAAGT
GGTCTGGGAAGTTAGGGCTTCGTTCAAGAAAATCCAGCCAGCTCCGGCCAAAGTACCAG
GGCCTGCGGCTTCAGCTTCGTGCAAACTTCAGAGTCTGGTACATCTAGGGGCAGGCTT
25 CCCGGGGCTGAGGGGGGCGGCAAGAAGTAAAGTCTATCGGCATGAGCGTGGGTGTCCGA
AAAAGAGAATCCACTAGTCGGCGCAAGTGGGTAGAAATCCGTAGCAAGGTTTATATGAGTA
CCTAATTAACCCCACTGGGAAGGGTAAAAACGGGTTAAGGGCCAATTAGGGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 888>:

30 **GNMPI76TR gnm_888**

GGCTACCCCTCCTCGGCACCTTCATCCTCATCCGGGGCTTCGGCGTGGGCTCCTCTACCCG
TACGCGCTTCGGCAGGGTCTTGATATTAAACCAGAACACCGCCTCCTCCCTAAACTCGTT
TGCTAGGTTACAGTCTTAAACTTCCGGGTCCCCCTGCTCTTCCGCACCACGGCCATCAT
CCATCTCCGGATCTTCAATCGCTTGGTCTCTCTCTTTGCTAGAAACCTGGTCAGCTT
35 CTTCTCGGTCCCTACTGTGGTCTTCGAAACGCTGGGTACATTGGGCAGAATTAGTACCGA
TCTCTTTCTCATCCGTCCCTACCAAGCGTTCTATACCTCTATCCTAGTCTCGACTCCGA
ACGCACCAGCTTCGGGGTCTTCTCTTACCAAGGTCTTAAGCTCGTGGCCATCCGAAG
CCGTCCCCTGGCCGGCAACAAGCAGCCCAAGCGGTGGCGCGTAGAGCCGGGCGTTGGGT
CCCCCTCCTCTCGGTACATCCTAGTTCTAGGGGGGCGGGGAAATCACAGACACCA
40 AAATCACGTTCTTCTAAGGTGATGATGAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 889>:

-876-

GNMPI77TR gnm_889

5 ATAAATAGCTACAGGGGCCTAAACGCCTTCGAGGCAGCCCTCCGGGGGTACTCAATCA
CAAAGTGTCTGCCATACTCCTATTCTTAGGGGCAAGCTGGGAAAACTAAACCTAGACAT
CTAGATCTTGGTCAGTTGAAACAATTTTAGGCGTGCAAGGCAACCTATAACCGGGGTAC
10 ATCTAGGTAATAGTTGGTATCCGATGGATCCTCAACATCCCCTCCGGTACCCGCTAGGC
CAATGCGGCCCTAGTTTGAGATTCTACTCCGCGTCTTCTAGTTCTTAGTCCTAGCCAT
AAAGATTCTGCTAAATGCAGGGCCTACCTAGGCCAGGCTTTCGGTTTCACGGTCTTCGT
TGCTATCATCATATGCAGGGTCAGCTTCGTCAACAAAAAGCCCTTGCTTCAGCGGGCGCA
AATTCTCCTTCAACCTACTACTCGACCTCGCCGAAAACGTAAACCAAAACCTTCGTGCA
15 AAACCTCGGGATCAACAAGGCAATATTGGTACCCTCAAAGTAGGCTTCAATCGGGGAGTC
CTCCTCCTCAAGAGGTGCTTTTCGTTGCAATCCTAAACCTGCTTTCCTAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 890>:

GNMPI78TR gnm_890

15 GTTCTTCTAATGGTCCGAGCTTTTCGTTGCAACCTGATTCTAAACTTTGCTCTTGCAGCA
ACGATCCTACAAAAGGTCTGGCTTTCGAAGCATTGGGAGTCAGATCTTCCCTCTCGAG
TTTCTAGTCTCTCCAACAATCTCCCTACGTCCAACCTAGTCCTAAAAATTGCGATCAA
TGCACTCTTGTCTCTCGGTTGCGGGCGCGATTTCGTAGTCTCAACCTCCGGTAACTCCG
20 CTCGGCCTCCGTCTTTGACCTCAGGATCGTAAGAGCTGCTAAGATGTATTGAGGTGCGG
AGTGTTTTCAACCTGCTCTCGTGAGGGGCGCCAAATCTTCAAAACCTCCTCCAGCTC
CTGTAACCTGGGCCCTAGGATGCTGCATTCTTGCTAAAACTGCCATGGCCGTGAGTTTCGT
AGTAAACAATTAGGCCCTCCTCTCTAGTCCAGGGTCCCTAAATTAGCAAAATCGAAAA
CTTCGGGGCCAAAATAATGCTATCAACTCTAAACTAGTTTCTGGCTTCAGGGCTGGGGC
25 TCTTCGGGGCATTCTAGGAGCCTGGATCCTAAAAGGGTCCAATAAGAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 891>:

GNMPI80TR gnm_891

30 AGCGAAACCGATGGACCAAAGCAGAAAATAAAAGACGGGGCGGTTTCGAGTTGCAACTAAG
CTGGTTGAAACCAGGGAAAGAGTTCTAAACGGAGGGAAAAGGACTGTAAGTTATGTAGCT
TAGGAATGATCAGCAATAAGAGGTGGGGTTGGCCGCCGGGCAAAAGCTACAACTAAGAG
AGTACAACGAAGGCATAGGGAGGGGCAAGAATGCCTAGGTTAAATTGAGGATTGGGGCT
GACAAATTAACACGCCCTGCTTGCGGGCAGAGGGTACAGCAAGTACCGAAGTTGAAAAG
GAGACGACGGAAGGGACAGAAGATAGAAGAGGATCACATGGGGCAAAAGGGGCAGATGGC
CTGAAAACAACTGCAAAAGCAGCCGGCCGACTAATTCGACCGTCCAGGTGTCAAGTTCAT
35 AGGGGGTAATACTCCTAGGGTCCAAATCAGACATCTCGTAAAGAGGGGGCGTCCAGATAA
AGAGTTCATTGATAGTGTGCTCTACTAAATGGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 892>:

GNMPI82TR gnm_892

40 CGGCGGGGTAGGAGGGGGTTGGAGTGCATCCAGGTCCCGGGCGGGCCACCCTCTCCTG
GTTCTGGTTCCCTCCTCTCTCCAGCGCTTGAGAGCGCTCCGGTCCCTCGGTCCCTCCAGA
GCAACTATCTTTGACCAGGGCGTAGGAAGGGGGCTTGCCCGTGTCTGGTGGTTAAGTAT
CAAACATATTTCTTAACCTAAATATGCGCTTCTTCTAACCACCTCCTCCGGCTCCCCGA
CTTCTGTTAGATACCAACATCCTAAAACTACGAGTACCAGCCTCTGCAGCAACTTCGA
45 TACGGCTTCTCTTGCGGCAACCGGGCCGTGGCTTCGAGCCGGGTGCTTCCATCCTGGC

-877-

GGTGGGGGTTCTTAGGCTTAGAAGCTCCGTGCTTTTCGGCTGCAAAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 893>:**GNMPI83TR gnm_893**

5 AACTGATGCCGGAGAGACAGACAGTTACGATGCAGGAGAGGCGTGTAACAAATGGAAAAG
GTACATAGGGAGAGGAAGGAACACCGGGGACTAACACGCTTCGTAAAAGAGACCCCTCTAG
TAGTCAAGGTCTCAAACATAAATCTGATCAGCAATCGGGTAACCAGGGCAAAAACAAGT
TAGACCTGAGTGCAATTCCTAGTTTCCGGGCCGCGTTTCATGATTGCAACCTCCTAAGTAA
CTGCGTCCGGTACAAAAATTAATAGTACTATCTTGAAAATTCGAGGTATAATTGCTGTG
10 GGGTAAATAGGGCTAGGGAAAACCTCGGAGAAGCTTCGTGCAATAGTGCTTTTATTATA
GGAGATCGCAAGCGTCTACAGGCGGGGTGGGGCGAAATGGAGAGGAAAAGTTATGGATT
CAGGTATCTTAGCTTCnTTAGTTTGCTTTTAGTGCTATTAGTTCATATATGCGTCTAGC
CC

15 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 894>:**GNMPI84TR gnm_894**

ATCATTCTCAGATCCTCATCTCGCTCCTGTCAACGTCTTCATATTGCGTTTCTTGATAG
TTCTCATGGGTGCTGTCTCTAAGGTAAATGCATTCTTCTTCAATGTGAGTACCGTAAACC
TTTCCGTAATTGTGCTCTTGTAACTTCGTTTTCATTGACGTAATTCTTTTCAGGGCAA
20 AGGGTTTATATATATCTTCCCTACATGCAAACTTGGCCCTAAAATTCTCGTTAGAGGTCA
GGGCCGCTCTTAAGTCTTTAGTTGCTGCTATTATTTGATTAAAGTCGGTCATTTTCGGCG
TCAAAGCAGCTCTCAACTTCTTCTTCAATGCTGCTTCTTTCGCTGGCTTCGTAAAAGCATCAGGGA
TTCTATTCTATCTCGGTTCAATGTCTGTTCTTTCGAGCAACCTCCTATGTCTTCTCTAA
ATAACGAATTCGTCGTGCTCAATGCAGCCTCTCGGGGCATCAACTTAATAATCGTAATGC
25 CCTCAACTACTGTCAACACCTCCCTCTCTATCGTCGCGATCCTCGCGGTCTGATAAAGC
TTATCTTAAAAGCCTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 895>:**GNMPI85TR gnm_895**

30 CGCTGGGTCATGAGTGCTTGCAGCTGCGTCTGCGGCGGTAGCAACAAAGTGGTTCGCTTC
GCTTCTCTGGGCACTACAGTCCGTACTTTGGGGGTCTAATTGCCCGAGGCCTAGGCGTG
GGCAGGGGCATCCGCAGCCACGGCCGCGCTGTGTCTGCGCAGGGCCGCTAGTATTCTGT
CGAGACCTCATTAACCTAGTACTATCGTCCAAGGCTTCAAACCTCGGGGTCTGCGGGGT
AGTATCTTCAGCATCCGTAACCCCTCGGGGTGCAATAAAAGCCGGGATTAAATCCAGTT
35 CACGTTCTAAACACGGGCGTGGGCATAGGGGCCGTAGCATCATCATTGCTCTCGCGGTG
GGTATAGTCGGGGTCGTAAATACTTCTTTCGGGGTACTGGTACGTTCTCTATCGTCAAA
GAGGCGGTCTTTATCTCGAAACTCACCTCCGTACCGTCCGCGGTCCGAACGTAATCGC
TTCATCTGTCAACGTAGCCCTCGCCTCCAAT

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 896>:**GNMPI86TR gnm_896**

TCCGTAAGTTAACTCATAGGTGGACATTTGCGCGGAAAGTACCCCGAGGGGGCTCGCC
AAAGTCGTAAATCTGGCCAGCAACCTGGCATTAAAGTAAGATTACAGAAATAAATGTCTA

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5 GGAATTATAGGGGAAAAAAGTAACGGGGGCCAACGATGCTTATCGAGCGACCGACTGGGC
ATTCAGAGGGCTAGAAAAATGTTGGGCTGCCGCAAACCAAGGAGGGGCTTAAGGGGAAAA
GAGGGTGCCTATTAAAGACGATAAGCATAAACATAAGTAGCTTAAGCAGGAAAGTACCAG
ACTGACAAGCACGTAAGAATCGTAAGCTGTTTCTTCTGAGTATATTAGAGGCAGCAGAA
10 GCGTAGGCCAGCGAAAAAGTAGCTGCCTGGGCAGAGCCAGGGTGGGAGGGGCAGGGGGCT
GTACGACAGAGAATACTTACGGGCTAAGTAAGCTTAAAAAGCTTCGCTTAAGTAGTA
CGGCAGAAGGCCCTACTGCTGCTACTATTAGAAAAATCTTGAAGTATGGTGAGTATTTAA
AGAATCTTAAGAGGAGTGCTCGGAGTTTCTTAAAAAGCTTATATCGGGGGGAGATCTTA
CTCGTAGATTAAGCCTGCAGACTCTTAAGAGAGACATAAACTGCGTTCTACTAGAGTGA
15 CATGAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 897>:

GNMPI87TR gnm_897

15 GTATAGCTTCAGCGTCCTGGGTGCGGGCCGGGGCCGAAGTTCGGGGTGAATGGGCCTAGA
AGTCGGTACGGGCATCCTCCTAACCGGGCCCCCTCAACCACATCAACTTCCAGTGGATCTT
CGGGGGTGGTACCAGCCTCCGGGTAAATTGCGGGGTGAGCTTCAAGAGGGCAGCGGTAA
GGTCGTAACCGGTCTTTGGGAGCTTCGGGTCTATTCTAAATCTTCCCCGTAACCTTGT
20 CCTCTAGTTGCTTCCAATCCAAGTTTTCGCTGCTTCAGGCATCCGGTAAATTTCTCTTT
CGGGTAAAGATTCTCAGCGCCATCCATACCAGCTCTTGCATCAAAACATACTTCAGATT
CGGGTTAGGAGTCTCGCCCTCATAGGAGCTGCTCTACTAAGGAGTTCGGTCAGGATTGC
TTTCAGATTAAAGAGGTGCAAAAATCGTCAAGTGCTTGGCTAACATCTCCATAGGATTTCG
CCTAATTGTCAACCTATCTGCGGGCATCAACCTCCGATCTTCAAAAAGCGCTAAATTTT
AAAAGAGCTGAGCTAGGTTCAATCTTGGTCTAGATCCCTAAGATTGGCTTCATCTCCCA
25 GGTCAATGATTGTACTGGTCTTAATAATTATACT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 898>:

GNMPI88TR gnm_898

30 CGTAAGAAAAATACTCGTACTCCTGGCAGGGGCCCTGCGCCTCTCTCGGTGCTTAAAC
TCTCTCGGTACTGGCAAAGCGGTCTTAATCTTCTGCTAGTAGTCTAGTTGCTATTG
GGCTCAAGACCAAGAACCAGGAGCAGTCTATTTCGGGGTAATGTTAACTTCGGCTGGAA
TATTATTATCCGGGGAGGTAGGGCGTCAGGGGTAAAGTTCAAAGACTTCAGCCAGGGC
TCTTAAAGTGGTCTTGGGGCTTACGGGCAATCGTGCTGGGGCGTGGGGTTCGGGAAGGT
AAAGGGTCTGGTGGGCTTCGTTTCATCATATTACGGGGATTCTTCTAGTTAGCTTCTTTGC
35 TAGGGTGGTTGCAAAATATCTCTATCTTGGGCATTACTTTTCGTCGGAAATCTCGTGATGCT
TCGTAAATCCGAAACTAACGGCGAAGAGGTAGTCGGAAGCGGCTATTCGACTCTAAAAG
AGAGGCTCCGGGGAACCTCGGGCAGAGGCTTTTATCGGGGTCTCTGAGTGTCCCGTCCCAA
GGGAGCTCCnGTCGTTATAAGTAGAAATCCCTCTATCCTACTTAAGCTAGTAATCCAGG
CGTAAATAAAGTTGGTAAGCTTGG

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 899>:

GNMPI89TR gnm_899

45 GACAGACAGGCTCTTAAATCCAAAGTCTCCCTAGTCATCCCTACTTTCACGCTTAAAGGC
CTGGTAATTCGAGTTAGATTGGCCGTGGCTACAGCAGACCTCTCCAGGGGCGGAAGTACT
TTCAGCTTCCCGTTGGTTGCATCTACAGACATCAGCAGCTTCTCTTTGTGCGTGCGATT
CTTTGTAGCCTTCTGGTAACGGCACCGTTCTACGTCTAGGGGTGTCAATACTCTAGTC
ATTCGTACCTAGGTCCACGCCAGCTCTCGTACAATTCCAGGCTTCGTGCAAAAAGGATTTC

ATCCGTACTCTCATCGCGGTTGCTTTCGGGCTTGTGGTAAACATCGCTAGTCGAAAGATC
TTTAGGTCCGTCCCTACCTCCTACCAGCTTATAGCCGGTAATAGGGTACATAGTGGTATG
TTTAGTGGGGTTCCTACATAGATTTAATACTACGGGTAAACCGGGCCATAAAC

- 5 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 900>:

GNMPI90TR gnm_900

CCTTGTGTCCCAACCTGCATTCTCGGCTACTGGCTACAATAACCGGAGTACAGGCTATGG
GGTCAGAAACCTGCTTCTTCCCCTCAATATCTTCTTCTGAGCGGCTTCTTCTTAGCTGT
CTCTTGCTCCTCCAACCTCCGTCAACTTATCTTTCAACGCCGTACCTGCCCTACCTACACT
10 AGTTTCTGGGCCTCTCCTAGTTCAGCTTCGTGCAATATCTATATCAGCAGCTACCAAAAT
CCTACTTGCGAGGCGCGCTATCCCTACCATAACTTAGGAGTTACTCACGGTCGTTCTTAG
TGTAATCTCCTCCTCGACTCCAGCATCAAAGTCGTTCCGCCTCTCTTCATCATAGTCTT
CAATCTCAATTCTAATGTCCTCCATCGGGGTACATCCTAGTGATTGCTTCATTCAACCT
TACTGTCATCCCTCCTAAAGAGGCGTGCTATGGCTTCATCTGGGCCATCAATGCAATCGT
15 TTTGCTTAGGCCCAATATCAAGCTCGTTTTCAACCTTGCTAACTTTAAGATCATGCCTGC
AGTCATGCTTCTCCTGATCCTCTAAAATTCTCGCCAATTAAGTTTTTCACTATATTA

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 901>:

GNMPI91TR gnm_901

20 TTCCTGGGCCCGCGGCTGCTCGGGGTTTTGCTTTTGCTGGTTCCTAGTAGGCTTCATAAA
GTTCTTTTGAAAAATTAATAACTTCGGAGGTGGTACATACTAAATCCGGGCTTCTAACGT
AAGAGGTAATGTTCGTAGTTTAACCTCGGGTGCAGGAATTCAGGTAACACGGTCAGCGG
CAGCAAAAACCTCGAAGATGAAATAATACTTCTACTAAGATCTAAATCTAATGTCCGCCA
GCCAGGTAACCTAAGTTTTAGTGCTATCTCCTCAACTCTCCGAAGGCGCAATTACAGG
25 CATACTACGAAGTTGGTCCGGCGCAATCCGGAGAGTCAACGTCCTCCTAAATCTCTTCAA
CGACGTCGGCTTAAGTTCGTCCCTAGTTTCGCGCAAGCCTCCTCCAGGCAGGAAGCTTCTG
GTCCGGATCTGCATGGTCCCTCGGTTGCGGGGCAAGAATCCTAAGTGCATCCCTGGGCAG
CGGGTGGTCCCGAAACGTCGAGGCCCCCTAAACCGGGCCAGATTGTGCAGCTTCAGGAT
ATTTGAGTTGGACGTCGCTGCTGCAAAGTAAGTCCCTCGGGCCCCGAAACAGCGTAAC
30 CGCCGGGTCCCGAACAATAAAGGCCAGGGGC

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 902>:

GNMPI92TR gnm_902

TTACTGGTGCGATCATCTGGCTACAGCGGCTACTATACCCCTACCAGCTCCTCCCTAG
35 GCTAATCCTCCAACCTCCGATTGGTTAGAGCTATAAACCTAAACCTAGCCGCTCTCAACG
CGGTTCTATATCTAAGAGCTCTCAGGGCATTCTAATCTTCTAGTCCCTATCGTTCGGA
GTTGATGCTCCCTAATCTACCTACTACTCTCCACCTCTACTTGGGTGATCGTACTGTCTT
CGGTCTAGTCGGGGCCTCTATAATCCTAATTGTATTAATATGCTTCAATGCGAGCAAAA
TCGCGCGAATAAATATTGCTCTTATCGTAATATTACTGTTCAAGTTCAACGTGGCTGTAA
40 TCGAGGTCTCTATCAAGGATCTTCTCAACGTGTGAAAATCTTCATTTCCATTCTCTGTAA
GCTTCATAAGAGGGGTAATCTTCGGCTTT

- The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 903>:

GNMPI93TR gnm_903

5 GCAAAACCTTCGCTTCAGAACTTAACGCGCGGGGGGCTCGGGCTCTGTCGTGGCCTCCAG
CCGGCACCTAAGCATTCCGGGTTAATAGTCAAAAGCTTCAACGTAAGTCCGCTCAAAATCAT
TACTACTAGAAAGATTCTAAATAAAATTCGATTCAATCCTAGTGGTAGAAATATGCTCCC
10 TAAGATCAGAAAAAGTAAGTTTCCTTTTGCCTGTCCGGTAAATTCACCTCAATATTCC
TCCAAAAAGTATTACCTTCCTAACTACTCAAATTAACACCGGTAGTTATAGAAGTCGAGC
CTTCCAATCCAATAGAGTTGCAGTGGGGTTAAAGAGCAACTCGACCGAAGTAGCCTCCA
AATCTTCAGCTGTAACTAAAAATCTTGCCTTGAACCTTCGAAGTAGTCGAGTCCTGGG
AAACGATCATTAAAGTCCGGGCACTACCAAAACATATCTTTGTTAGGCTATTTCTACTCG
15 TACTCAATCCAGGCTTACTCTAAGAAACACCAGAAATACTTTTCTAGTACAGAATCCGG
GCTTGGGGTAAGCTTCGTGCAAAGCTTCTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 904>:

GNMPI95TR gnm_904

15 TTGGGAATCGCTTGGTCAATATCCGGGCTTTCGTCTCTAATACTAAGATTCTTGGCTTCG
CCGTCTCCGGCCTACTTGCAGAGGTTCTTATAAACCTCTAAAGTTCGTTTCTCTAGAGGC
TAATAATATTCTCGTTACGGTTATTAATACTCGGGTTACTACTATCCTCCTAGTCTTAGG
CTTTTCTTCTCAGCTTCGTGCAAATACTCAGGCTATCCAACCTCCTAGGGGTGATGGTTGG
20 CCTACCATAAAAGGCAGCTTCAGATTCAATATCCTAATTCGGGGCTTCTTTCTGTCAT
TCGGGTAAGTACAAGCTTCTTTAAGGGCGTCTCGTTTCAATTAAGTAGGCCCTTATGG
AAGTGCTATAGTTAAATTGAAATCTCATAACCTCTCTTCATATCTTATGCTTCTAATACC
TCATACTCAATTTAATGTAGATGCTCCTTCGGTAAATATTTACTTAAATGCAATAGTAC
ATATGTCTTTAAATCCGCTCATTATGGTTCTTTTGCTTCTTTTGCTTTGGATGGGCTAC
CGCCCCGTATCTAGAGCCGGGGCGCTCTTGCGTTCCTCTAAGTTCTCTTAAGGTTACGAG
25 TGTCGTCCGGCTGCCATCTCTATGTCGCTGGTAAGCTTCGTGCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 905>:

GNMPI96TR gnm_905

30 CTCCCCGGGTCTCTTAAATCACAGACGTCTCTACCCCTCCTAGACCTCCCGGCAGCTACGC
CCCCTACAGCTTCCGCCGCGTGGTCGTCTGCGTCAGCGCCGACCTCGGCCCCGTCAA
CTCCAGGGCTGCTAGCATCCTGGCTCTTAAGCTTGCTCTTGCAATAATCGTCAAAGGCAA
GGGGGTCAACAGGGTCGGTAATACCTCCAGGGTCTTATTCTGAAAGGTTCTATGCGCGGG
CACCAGCACCTCGGCAGAAGTGGTCGGCGGCAGGGGACCTAAGAAAGTCCGGGGTACCCG
TAGCAGGGGAGCGTCCCCCTCCAAGCCTGCAACTCGCAAGGAGACTCCAGAGCCTCCTCC
35 TGCGGCTAACTGGCCAGGCCCGAGTCGTTGTAAATGGGAGACGCCAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 906>:

GNMPJ16TF gnm_906

40 GTTGTCCAGTGGGGGGGGGGGCTTCCACATCCAGCGCGTCTTTCAAATCGCAGCGGT
ATCGTGGTATTCAAACCTTTTCAGGTCAAACAGGTTGCCCAATACGCGCAACACTTTCCA
CAGCGGACGCGAATCGCCGAAGCCTTGTAACACGCCGTGGAAGGATTGCAGACGGCCTTC
CATATTGATGAAGCTGCCTGAGGTTTCGGTAAACGGTGAACCGGCAGCAAACGTCTGA
AAACGTCAAGCACGGTTTCGCTGAAAACGGCGTAAACGCAATCAGCCTTTTGCCGGTT
TCAACGCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 907>:

GNMPJ71TR gnm_907

5 GACGAATCGGTGTGGACTGAGATGGCAAAGATCGTGTGACCCTTAAAAGGTCGCTTAGT
GGCCCGGCCCTAGCCTACTAACGATATCGGTGGTGGTGTAGCTTGTCCGTCCTAACT
ACTAGGTGGCTGGGTCCGGTGCTGTGTAGTACCCCTCGTATGGCCATGTTACCCGTGGG
10 TTGGTGGCGTAATATAAATAGTTGATGGTGACCCTCGTTATAGGGACGTTGCCGCTGTCT
AACATTGTGTGCTAACGTTGACCCTGTGAATCTGCCGATGACGACGATTTACCCCTG
CCTGGGCTCCCCGTGTACTAGGTCCCGAGTGTGGCGGCCCGTTCCGCGTTAGAAAA
TTCGAAACTAGGCGGATCCCGGCCACCCCTACCCTCAGCGACGCTTTATCCCAAACCC
GAAGACAGGGCGCCCCAACGACCAACGCAAGCGACGGTAGTCGCCACTACGC
CTCTACTAACCGATAACCGGCTTAGTAAACCTGACACTGGTCGATACTGTTGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 908>:

GNMPJ73TR gnm_908

15 GCGTGTGCGAAACGGTGTAGGACCCGGCCGACCACGTTGACGAAATGGCGTTGATTCGTC
GGCGCCGGGCATGTATGGATGCATTGGGTGCGAGTATCCCCAACGGGTAGCCCCGTTGA
AATGGCAACGTGTTAAAGTTATTCGTTGTCCCGACCACTGTGTCAGTACAAGTTGAAGAG
GTGCGAAACCCCTAGCCCGAAGGTTCCAAACGCGACCCCTACACCCAAGGTCCCCCAA
20 CCCACTCGCCCCCAATGGGAGGGTAGCACGTTGACCATACTTGTACTCTGTGTGTGCT
GATAGTTCGTGTGACACTAAACTATTTTCTACCCTTCGTTGTACATGGATGGCCTGCGT
TCCACCGAACGTGGTAACATTAAAGCGACCCGATTGTCCTTACAGACGAAATGCCTTG
TTGCCCTCGTGTGGCAAAATTAAGGTCGGGCAATGGTGGAAACATGGGACGTCGTTGCTT
CTAATCGTCTTTGGACGTCCTGTGAAGTCCTGGTGGGTAAATAGCTTGGGTGTATATAA
25 GAACTTAATGCCCCGACTGGGTGCCTTTTCGTGTGTGGCTGCGGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 909>:

GNMPJ75TR gnm_909

30 CCTGGGTAAAGTAAACCCCTGGTAAAGTAAAAATTTGAACAACTGGGGGCCCTCGA
ACGGGCGCCCGTAGCGATTCCCTGTACGGAAGAATTATCACTACTGGTGTGCGAG
CTGCCCTATGGCTTCGCCTGGGACGGGAAGGTGCGGGATTAATCTGTCACGGTTGTTAAA
TCCAAATCGCCATAAACTGGCAAAGTTCCTCACTAACACACCTGGCAACGATCGAACTAGC
TAGCAAGTCCCACTCTCCGAAGCCTCCTAAACGACAGAGCTAAGTTCTATGAGTAACCA
GCACGGGCCAGTCCCTATGTGCCATTGTGTCCCTATATTTTATTCACTAATGCTTCGGCTC
35 TGAATGATCTCCAGCGTGGCCAAATTGTAAGGGAAGCTCTACTCTAGGTGAGCCCTGT
GTCCAGACGTCCCTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 910>:

GNMPJ76TR gnm_910

40 TTGCGCTAGGACGCTCGTTCGACATAGTTATGTTAAAAACGTGGTTGTGTTTGTATTGCG
CGTGATAATGGTGATGCACCCGTTGTGACGTCCTAAACGTTGCTCGAAGTTTCGTTGCG
TTACCTTTTACGTCGCCGATTGGTTGATGTCCTGGATACTCGTATGATGGGACAATCGAC
TGTTAATGGCTCACTTATACTCGACTTCTCTTGGTACTGTGCACTAGTTAAAGTGCTAA

ACTCCTGAGCCTAAAATTTTCGTACATTGTTTTGTTACCCCTAGTAGGCTTTGGAGGGCAA
AGGTGACGAGTAGTGAAGTGGGCATGTCTAACACGGTGTAGATGGCTAGGTAGGTAAAAA
CACCTATTATTTGTTGCTAGTTCCTTAATTTAAATACCCGGATGTAAGTAGTAGGTAGG
5 GTAGGTAAACTAGTAGTTATATTAATGTTTACACTGGGCCCGTTCCGGCTGGTGTAAAGTT
AGTTCGGTACTTGTGATAATACAAACACTGTTTATATTAATACGGGTAGGACAAATGTAG
TGATGATTACGTTGTGTTACCTTCGCCCCCTTGCTTATACCTTAACCTACACCCATT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 911>:

GNMPJ77TR gnm_911

10 TAGGCGTGGCTCCTCGTGGTGGGTGGGCAAATAAGGCCGAGTTGTTTGCCTGCCCCGGCT
GCACTCCCTCCGTTAAATTAATTGCCGCAGGTAACCCTCCCCCGTCACTTAAGTCGCCC
CCACCGTTGGCCGAGTAACACTCCACCGTTGCAACGGCAATGGCGGACCTCCCGCTC
CGACCGCGCCGATAACTACTGCTTTCCTACTGGCACCCGAACATGGCGGAATTAAAGT
TAACGTTTGCCCAA

15

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 912>:

GNMPJ79TR gnm_912

TTTCAGAACGGGTGCTATTACATCCGTGCCAGGTTTCTTGCTCTCCCAAGCATCAGGTCC
CGAGGGTGCATCCGGTCCCTAGGTTTCATAACCGCCAGGGTAACCGGGCGAGACCCGC
20 GACCACAGGTGCGAAAACCGCACGGAGACCCGCCGAAACAAAGCTCGCCAATTCTCAG
CCGAAGCATCCCTAAAGTGGCTCCGGTTCTTTAGGGTACGCTGGGTTTCAGGGTCATCAT
GGTCGTGGTTCTCTTCGCGAGTAGTACTCGGGGCCTAATCGGCCCAATCCTCCATCCGGT
TCCATCCGTCCGAGACGCCTACATGCTTCTCTCAGCACTACTAAGAAAGTCCCGCGCTC
TCTGGCGCTCCTAAAGCGCCTCATAGAATTCTTCAAACACAATTCAGAACCTAAAGGT
25 CCCCCTGGTCCCCGCGGCCCTCTCCCTAGAAGTCAGCATCCTCACCTACGTGGCTCGGGT
CTTCTCGTTGCAAGTAGCGCGCTTGTTCTGCTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 913>:

GNMPJ80TR gnm_913

30 CGTCGTGCAAACTCCTGGTTGGCCGCCGAAATTTAGGGTAAGTCTCCGGGCCCTAACTG
CCGCCGCTACTGTCTCTTATGTCTCTAGTTCTACCGCTCATACCAAAGAGGCCTCCCAT
ATGCTATTACTGCTGGCGGCCATAACTTGGGAGTCTCGGTCTCTGCCAACTGCGTTTAA
GCGGTACAGACCTAACCAAGTCCATGCTGGCGTCCGAAATCTGTGCTCTTGGCCTGC
AACTAGTCTCTCTGGTGACTCCTTCTGTCTCTCCGTGGCAAGTCATACTCTCCATCTAA
35 GTATTAAGAGGGTTCTAGCTACGTCTCGGGTGGTCTTCTTACTAAAAGCTCTCTCAGGG
GTCCCGTCAGCCCGACCTCTCTGAGTGCGGTCTTACGGGCCGTAACCTCCGAATCTCGCG
GCCGATTCAGAGCATTTCAATGCGGGGCTACCTTCGTGCAATAGGCCTTCCAG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 914>:

40 **GNMPL04TF gnm_914**

TGAGATAATTCCCGCCTTGGATAGCATGGAACATGACCGAAGAGCTGCAACACTGCTT
TGAAGCACCTTTTACACGCTCGGCCCGCTCGTTACCGACATCGACCCGGCTACGACCA
CATCACCTCGGCATAGGCGCGCCAATATCGGCTGGTACGGCACGGCGATGCTTTGTTA

5 CGTTACCCCGAAAGAGCATTGTTGGGGCTGCCGACAAAGAAGACGTGCGCACCGGCATCAT
CACCTACAAACTCGCCGCCACGCCGCCGATCTCGCCAAAGGCTGGCCGGGCGCACAAAT
ACGTGACAACGCCCTGAGCAAAGCGGTTTCGAGTTCGCTGGCGCGACCAATTTTCGCTT
AAGCCTCGACCCTGAACGTGCCGAGAGCTTCCACGACGATACTCTGCCTGGCCGAAGGCG
CGAAAATCGCCCACTTCTGCTCGATGTGCGGCCCCAAATCTGCTCGATGAAAATCACGC
AGGAAGTGC CGGACTACGCCGACAAGCAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 915>:

GNMPL55TF gnm_915

10 TCCTACCTTTTCTTATATGCTCCAGTGCAAAAGTAAAAATACCACTTGGGATATGGAGAG
GGTTTAACTTTGTATTGGGTTGGCAGCAGACCATCAAAACCTGCCCGTCATCGCCAAA
ATCGCCGAAGATTGCGGCATCGCCGCCCTTGCCGTCCACGGACGCACGCGTACGCAAATG
TACAAAGGCGAAGCGCGTTACGAATCATCGCCGAAACCAATGCCGTCTGAACATCCCG
GTCTGGGTCAACGGCGACATTACTTCGCCGCAAAAAGCCCAAGCCGTCTCAACAAACC
15 GCCGCCGACGGCATTATGATAGGGCGCGCGCAAGGCAAGCCGTGTTCTTCCGCGAT
TTGAAACATTATGCCGAACACGGTGTTTTGCCGCTGCCTTGAGTTGGCAGAATGCGCC
GCCGCTATTTTGAACCACATCCGCGCCATACAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 916>:

GNMPL69TRD gnm_916

20 AAGTTGGCAACGTCGTTTGCTCGTACTTAGCCCGACCGTTTGCTTGTGCTGGCCGAGGGT
GGCAATGGCTAACCTTGTACACCTGAACGCCCCCTCCGCCTGCGAAACGTTGCTAGGCA
AGGCGTAACAAAATGGTGGATAATAGTAGATAGTCCACGGTGGTAAATTACATTTAGTG
ACAACACAGCGGACCAACCCAAATTAGCATAGTGGCGTTCTGTTCCAGTCTAAAGAGAA
25 TGACCTCTCAAGGCGTCGAAGTATTAAGCGAAGTGGCCTTGATCACC CGCATCGCTCGT
GGTCTGCTGTTCCGCTTCGACCCAAACCACTTATCACACCCTATGTCCATTTTCCGC
CCTCTAAACGTTGCTCGAAACAAGTGGTCCAACACACCGCCCATAGCACC GGAAGTACA
ATAGATAAAACGTTGCTCGAAACACCCCTAGATGGGACCCTCCACTTGAAATGGACCACC
CCCGTGCCCTAATTGTCCCTAACGTATGT

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 917>:

gnm_917

35 GGCTAGGGAGAGGGCGGCAACCGTAGGTTTGCTTGAGCGGTATTTCAACATACAGGCT
GCTTTTCAATTGTTGAAACCGCACTTTAGCTTCGCAGAAACCCCGCTTCCTTCGGAA
GCTCCGTTTTCAGACGACTCCCTACTTTTTCCCGCCGCAACGGGTTCTGCCTTTTAA
CGCCGCCCTTCACTGCTCCGCCGCTTGATCAAACGCGTCCGATGTTGCCTkTCATCAGG
CGCAGACCGCGTCGCGGGGAGAACGGGTTGTGAGCTTTGCGCAGGATGTCGTGCTTGCCG
CTGGTTTCGCGGGGCTTCGCGCCATTTCGAGTTTCCCGTCGTTAAGGATGGCGGCGGTACGG
TCGATGATGAAAATCCAATCGGGGTTTTCTCTTTGATGTATTGAAGGAAACAGGCTGC
40 CCGTGCCCTGCGTTGCG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 918>:

GNMPO23TF gnm_918

ACTTCATGTTACGTTCAAAAATTTAATGCACTCAATATATTTTTTTAAGGAGAAGCAGGT
GAGTCAAACCGATACGCAACGGGACGGACGATTTTACGCACAGTCGAATGGCTGGGCAA
TATGTTGCCGCATCCGGTTACGCTTTTATTATTTTCATTGTGTTATTGCTGATTGCCTC
5 TGCCGTCCGTGCGTATTTCCGACTATCCGTCCCGATCCGCGCCCTGTGGTGCGAAAGG
ACGTGCCGATGGGCGGCGCATGAAGCGGTGTGCGCCTTCGACGCCGCTGTCGCTCCATTC
GAGGGACTGTTCCGGCGGTGCGGCGAACATCATAAACAGGCGGGCGGTGTCCGCGCCGTA
GGCGTTAATCAGTTCTTGCGGATCGACGCCGTTGTTTTGGACTTGGACATTTTTCCGT
GCCGCTGATGACGACGGGACGCCGTCGGCTTTGAAGACGGCGGAAATGGGGCGGCCTTT
10 GTCGTCGAACGTCAGCTCGACATCCGGGGGTTGATCCAATCTTTGCCGCCTTTGTCTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 919>:

gnm_919

GCGGGTTCCGAAATTGTGCTGAACCGGATTATCTGCTGGGAATTGCTTTGCCTGTTTGGG
15 GCGTGGCGTATTTCTGGCGGTTGTCTGACGGTTTGGTGGGCGTGGGCAAGGGCTAAAT
AAATCAATGCCGCTCTGAAAGGTTGACACGGCATTATTTATTGTATGTCTGCTGTGCTGCGTA
TCAGTCCAGATTCAATACGGCGGAAGTGTAACGCTTGCACGTCGTCCAAGTCTTCCAG
CGCGTCAATCAGTTTTTGCAATTTGACGGCATCGTCGCCGGAGAGTTCGGTTTCGTTTTG
GGCGCGCATCGTAACGTCGCCGCTCAACGGATTGTAACCTGCCGCCTCCAAAGCGGATTT
20 TACGCCCCGCCAATCGTTTGGCGCGGTAATGACTTCGATGGAACCGTCGTCGTTGGTAAC
CAGTCTTCCGCACCGGCTTCCAAAGCCGCTTCCATCAGCGCGTCTTCGTCAACGCCGGG
TTCTGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 920>:

GNMPP87TFB gnm_920

TATTCCTGACGATTCAGGTATTCCTGACGATTCAGGTATTCCTGACGATTCAGGTATTC
TGACGATTCAGGTATTCCTGACGATTCAGGTATTCCTGACGATTCAGGTATTCCTGACG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 921>:

GNMPS93TF gnm_921

CGAAATTTTCATGCCTTCGGCTTCTTTGGTGAGCTTGACGCAGAATACCATGCGTGCCAAA
ACGGATTCCTTGTCTGTGTTCAAAAATAACGGGTGATTTAACCATTAAAGGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 922>:

GNMPS95TRB gnm_922

CACCTCCTCCACCCGAAGAAAAAATTGATCCGGGTGGAATGGGGTCGGCGGCTGGCCCC
GTTAATAGTAGTCCCGAATCGTCTGTGGGTACTGGTGCGCCGTTGTACCGGGTCCACG
GTGTAGGTGGGTGGCAAGGTGGCTAATGAGGCCGTTCTAGGTGGTACTGGCCGGTGCCC
ACTGTTCCCTTGATTACCACTAATTAGGTATTGACGGGTCGGTCGACTGGTACACCGCCC
40 CCTGGCCTGTCCGGCCTGTTGGTGCCATGCTGACGACCCTTACTTCCGAAGCGACCGCG
GTGGTGACCTAGGATAAGTCGAATACTGGGTGTGCTAATGTTATGTCGTCGGCTCGTACC
TTGACGGGTACCGCCCTTATGTCGTCGCCTGGCATGGTGATGGTGTGCTTGGCCCCGGAT

GGGACGGATAAACCTGCTAATATTCATGGGACCGCCGTTGTTGGTCCCGCCACGCCGTT
GTTACTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 923>:

5 GNMPU24TR gnm_923

GGATGGATAAAGGCAGCCGGCATTCTACGCGTCTGTTTTAATACATTGCGGGATTGCT
GCCTGACTGCCTTAGCCCTTGCTTTGCGCGAAACAAAGACCCGTAAACCGTCTATATTCA
AACGGTTTACGGGTCTTTTTCTCTCTTGCCGTTTTCTTCAGTTTGCCGATCCGACCACG
CCACCGCCGATTCTTCAAACGGTTTCCCGCGTTCTTCCCACTTAACGAACATTAAGTTC
10 TGCTACTGCTTTAGCCCAATGTGGAACTTGCGCCCTGTCCGAATGTTGCTGCGCGCTT
TGCTGAACCTTCTGCCCTTGCGTTTCTTTGTATGGGTAAACAGCAAGCCGTTTTTT
ACATAGTCCTTGCACATCAAATCCGTCACCTTCTTTCACTGCCGT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 924>:

15 GNMPU24TF gnm_924

ACGCCGTATATTGACTGCATTAGGCTTGATGGCGGTAACCTATTCAAGGGTGGATAGATT
GGTAGCCCATTTTCAGCAGCGGATAACCAATAGCATAACGGGCGCGCCTCAAGCGATGTT
GCAGCTTTTTATATAAGCGCGGTGGAATCGTCTTAATATCCTGTTTGGCGCGATCGC
CTTTATTCTGTCAATTCATACACCTGACAAACTAGCAACCTCAATCGGGAAGAAAAATA
20 AATGGTAAAGATATGTTTGATAACCGGCACGCCCGGTTCAAGGAAAAACATTATGAATGGT
TTCCATGATGGCGAATGATGAAATGTTTAAGCCTGATGAAACGGCATAACCGCTAAAGT
ATTTACGAACATAAAAGGCTTGAGAATACCGCACACCTACATACAAACGGACGCAGAAAA
GCTGCCGATATCGACAGA

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 925>:

GNMPV25TF gnm_925

TTACAACACGGTTTCTTTAGATTTTACGTTCTAGACACTAGTATGAATCCCTGCACCGCG
CAACATCGCATCTGCTAGATCCGCCGCTATCATACCACTAGCGGTTGCAGCAATCGTAC
TTCCTGTTGAATCACATTGCCCT

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 926>:

GNMPV30TF gnm_926

GCTTCGGCTTTTTGGCGAGCGGTGTTGGCATCGCCGTTTTTTAAGATGCTCAATACTTGA
GTGGCGTTTTGACGGATTGCGTTACCGCGTCGGCAGGGGCGGCAAATGCCATGCCGATG
35 CTCAAATACCGATGCCCAATGCGCTGATGAGGGAGGATTTTTTCATGATTAAGTGTCTT
AGTTTGAATATGATGGCATACGTTTATTCGGCGGCTTTTCCGCATTCTTTGCGCTTGC
GCGCCGCTCGGCCTTTTTGGGTAAGCGTCGGGTGTCCAAATACCGTCCTCTTTGAGCC
GCAGCTCGGTTTTGCGTACCATCCATGCGGGATAGCATAAACCGCCGCCCATCAGAAAAA
ACACCGCATCGATACCGTGCTCGTCGTCGATCACATGCACACGCAGGCCAGGTTGCCACA
40 ATACGCCGTCGCGGGTTTTATGGCCGCCACGGTTATCGTGAGTGTAATCCCTCCAGCC
GCCAGTCGGCCAGCTGCTTTTTAGCCTGCTTTTGCAATGCGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 927>:

GNMPV42TF gnm_927

5 GTCGTAAATAGCCCTCGAAATCAAATGCCGTCTGAACATTTCCCGTTTCAGACGGCAT
TTTCAAACCGGACTGACGCATCGGGAGCAACCGCCCGACCGGATAAATTTCTGCCGCA
GACAGTTTCAGACGGCATTTGCCGCCTGTACAATATAGTGGATTAACAAAAATTAGGACA
AGGCGGCGAGCCGACAGTACAAATAGTACGGAACCGATTCACTTGGTGCTTCAGCAC
CTTAGAGAATCGTTCTCTTTGAGCTAAGGCGAGGCAGCGCCGTCCCTCGCAATATCCGTC
10 CCGCCCCTGCGGCGCGGATACGTCTGCCTGCGCCAAACGGGCGCGTCGTTGATGCCG
TCGCCTATCATCAGCACTTTTTCCCTTCTTTTGCAAGGCTTTGACGTATTCCAGTTTG
TCCTCGGGCATGGCTTGGGCGCGGTAATGCGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 928>:

GNMPV63TRC gnm_928

15 GGGTAGTGAGGCCCAAAAAAGTTTTGTTCATTTTGAATAGGCTGCCCTTGTACTTGGT
AAGGCTCCGACGATGAAAGATGACACCCCGGTAGGCTAGCTCGTACGGTAGATCATTGGT
GGCAGCGAAGCTGGCCTGACCCCGGCTATGGCGTACACTAGGCTTTGGATCGGATGGTG
GATCGGTCGTACTGCCAGCCGGCCGTTCCGCCGGACCGATTGTGTAATAGATCCATGGT
20 AAAAAAGCTGATGAGGCCCTTTTTGAGGAATAAGTTGCTCCGAAAATATGTTCCGTTGAT
GAACATTGTAATAAGTTGTGCGAAGGAAGATGGTAGTGCTGCTACTAGTGACATGTGT
GCGAAAGTTACTGAAAGTACTTCGTTCCATCATTATGGCGCGCATAGTGATGACTTCAAG
CCTTAAATTATCTGTGAATATCCCGTAACGAAAAATAACATACCGTTAAGTTAAGAAGTG
TGCGAAAAATCGCCTAATCCTCCTCCTCGGATCCTCCGGCTCGTCCTGATTAATTGCTTC
25 GATGAGAACCCCATCCATATTAATAATCGGTTGTATGAATTCCCGACTAATAATGCAGTG
ATTATCGAA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 929>:

GNMPW59TF gnm_929

30 CCAACAGGTGCAAAATGGTATTGGTGCTGCCGCCATCGCAATATCCATCGTCATAGCGT
TTTCAAACGCTTTTTTGGTGGCAATGCTGCGCGGTAACACGGTTTCATCGTTTGCTCGT
AATAGCGTTTGGTGATTCGACAATCATACGGCCGGCTTCGAGGAACAATTCTTGGCGC
CGGCGTGGGTGCGCAATAACGAACCGTTGCCGGGCAGGGAAGGCCGAGTGCTTCGGTCA
GGCAGTTCATCGAGTTTGCCGTAAACATACCCGAGCGTGGTCGGCACGCTTGCCATGTTT
35 CTTATCGGCGGCGTACTGGTCGCCCACAACCTCGGCCTTCTGCACGATTTCTGCACGCG
CAACACTGGGACGCTGGCTGGGCGGAGTACTTCGCCAACTTCGTTGTGGGCTGCTTTCC
GGTTCGATTGCCTGCGCTTCCGCCTTGCCGCTGATGAATCGTTTCGGCAGGCATTGATT
CTTTTTCACATACCGATGCCGTTTGAAAGATGTTTCAGACGGTATCTTCCGAACCAGACAG
ATG

40 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 930>:

GNMPW71TR gnm_930

CTACTAGATGAAAACATAGAGGTAGAATTTTCATGACATCAGCATGGGCAATTATATTTTA
CACATGACCCTAAAAGCACAGGCAACAAAAGCAAAAATAGACA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 931>:

GNMPZ21TR gnm_931

5 GCTCGGTACACCAGGAATGGTCAGCAACTTCACAGAACTCCTAGTGCCACCTTCCTTTT
GAACTTTTATGACTTCTGGACAGCGTCATGATGATTGTCAAGTGTGACACCAGTGGG
AGTGTCTTTTTTTCACATCCCCTTTAACCAATGCCACTGCGCTGCCTGCGATAATCTGCG
AGTAGGCTATGACTTTTGGCGTTCTTGGGGTGACAGTTGCCTACATCGCGTCCGTCCA
ACAGGGTTTCTCCCACCATCTCGCCGACTGCCGCGCCGATTGCGCCGTCTCGACATTTGC
10 CTTTATTTGCTACCGCGGATGCACAGCCTGCTACGGCATGCGCTATCTTGTGGGCAATGT
AGTCTTCGCTGAGATTAAGTTTGATTTTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 932>:

GNMPZ44TR gnm_932

15 ATCGCCCGTCTCAATAACCAATAAGCCTTTGCTCTCGATCCGACCACCATTGGAGATAAA
TGTGCGCTGCCGCTCCTTTTTCGGTGGTTTCGATGGAGAGATAAGTCGGTGAAGCTTCGGT
GCCGTGCGGAGTGGAGGCGATGCGGCCGCTGTTTTCAATGCGGACTGACGAAGTCACAAG
CAATGCTTGGCCGCTTCGAGTGTGACGGCATTTTTGACGCCTACGCCTTTTTCATTGGC
AGTCAGTGTGATGCTGTGCGCGTACATAGCGCCAGTGCAGGAGTATCAAAGGCAATAGT
20 CGGTTTCGTACCGCTGCAGTACCTGCACTGATTTGCGCCGCTGGCGTAATCTACTTTCTG
AGGACCGGTAGAAACCGCCAGGTTTTTACCCTGTAATTTCCCCTGCAGAGCAACTGC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 933>:

GNMQA27TRB gnm_933

25 CAACTCTGCGGATGGGGCAGGTAACATATGTTGCCCTATTTAAAAATTTGTTGTGTGTG
TGAGCAGCTATTGGCAACGCGCCTGTGTTTCGCTTTACTAGCCTGGCCATTAATAACTT
TGCTTTTACCCTCCCTAGTAGGCTGGACCGTGCCCTGCGTGCACGGCCTAAACATAGGCC
GCGTGTGTTGTTGGTGCCGTTTGGCGCTCGTACATTGAGCCCGTGTGTGTCGCAATCGTC
GAGGAAACAGTTCTGATAACGTTGCCCGAACTATGAAGTGTGGCGTGGCGGTAAATGTT
30 CTTGTACTAAAACAGTCGTCGTGGAAAGAGTGGGGGACGCGTGGCCTCCTGTGTAGGCC
GAGGAAACTGGGTAGGATCCCCCGTTGACGTCGCTGACTAGGAAATCGTCCCGGTGGCA
GAGTGTGTTGTTGGAGAGCGTGTGATGAGGCGCTTGACAAGATTGTTTGAATGGCGGC
ACTGAAGAGGATGGGGCAGTCGTTGCTGGGACGTCGTGGTTCGTTGAGCTGGTGTAAAGC
CTGGTGGG

35 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 934>:

GNMQA92TF gnm_934

TTTCGATGCTGCCTTCAAACGCGCCGATAACACGGCTGGCGAGGAAGGCGGTGCAGAGGT
TGACGGCGAGCCACATCCAGCGGTTTTTCACCGAATCCCACACGGGGCGAACAGGTCTT
40 CCTCTTCGTCAAACCCGCCATATTCAGCATATCCGCTTCCGATTCTTCGCGGATCACGT
CCACCAGCTCCTCCCGGTAAAGTCGCCGTATTCGGTCTTTTGAAGCGAAATGGTAAGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 935>:

GNMQB81TF gnm_935

TATTTTATCAGAAATGCCGATGCTTGTCTGTTTCAAATTAATTTCTTTCAAATAAATTA
CTTATTCGGATTGCGGGGCTTCGGATAAATTCCTTGCCAAGGTGCGGCATTGCCTGC
ATAATTCGCTTTCTTTGCCGGGATAGCTCAGTTGGTAGAGCACCTGACTTGTAAATCAATC
5 AACAATTCGGCGCTTCCACGTCATGTCCGGCAATATGGGTGGCAAAGTTGCCGCCGCTG
TAGGAGATGAAGCGGTGCGGGTAAAGTTCGACGGCGCGAGTAACGTGCGGCCCTGCCCG
AATACGACATCCGCGCCGAATCGACGGCAAGCGCGCAAACCTCAACGACGTTGCCCTG
TTTTCCCATAGAAGATTCGGTATCGAACGGCAGGTGTTCCGCTGTTCCCTTCCGCG
CCGCCGTGGAACATCAC

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 936>:

gnm_936

CGAAATGAAACGGGTAAACACAAATAAGGCCTGTATGCAGGCAAGGTTTATTGTGTT
TGACCCGGAACGGGTTCAGACGGCACGAACCGGGATGCCGTCTGAAAGGGGTTT
15 ATCGGGTGGCGCGGTAATCTGCGTCGGCTTTTTCAAAGCGTTCTTGGGTTTCGCGGAAG
GTTCTTTGTTGAACAGGGAAACACACGGCAACGATCAAGCAAACAATAAGCCCGGCA
CGATTTTCGTACATCGTCAACAAGCCGCTTCTCCTGCCGCTTGAGCCGGTTTTTTCACCC
ATTCCGCCCATACGACTACGGTTAACGCACCTGCAACCATAACCGACAACGCGCGTAGG
CAGTGATGCGTTTCCACAATACGGACAGAATCACAATCGGGCCGAATGCCGCGCCGAAAC
20 CTGCCCCACGCGTAAGACACCAGTCCCAATACTTTGCTGTTCCGATCGGAAGCaTCAGGAT
GGAAATCACGGCAATCGCCAAGACCATCAGGCGGCCGACCCATACCAATTCGACTGATG
CGCGTTAATACGCAAAAAGTCTTTGTAGAAGTCTTCGGTAATCGCGCTGGAGCAAACCAA
AA

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 937>:

gnm_937

GCTTGCCGCTATTTTTCTACGCGCAATTCGACGATTATATTTTGGGCGGGCGCAGCCT
AGGCCCCGTTTGTACC CGCATGTCGGCAGGCGCGTCCGATATGTCCGGCTGGCTTTTGAT
GGGTCTGCCGGGCGCGATTATTTGAGCGGTTGAATGAGGCTTGGATTGCCATCGGCCT
30 CTTGGTTCGGCGCGTATTTCAACTGGCTTTTGGTGGCGGGCCGCTGCGCGTACATACCGA
ATACGCCAACAACGCGCTGACGCTGCCGATTATTTCTTCCACCGCTTTGGCGGGGCGG
ACACTTGATGAAAGTGGTTTCCGCACTGATTATCCTGTTTTCTTACGATTTATTGCGC
CTCGGGCATTGTGGCGGGCGCAACCCTGTTCCAAAGCCTGTTTGAAGGTATGACTTACAA
TCAGGCAATGTGGCTGGGCGGGCGCGACCATCGCCTATACCTTCTTGGGCGGCTTTTT
35 GGCGGTAAGCTGGACGGATACGCTGCAGGCTTCnTtGATGATTTTCGCGCTGATTTTAAC
GCCTGTGATGGTCTATCTGGGCTTGGGCGGGCGGAACAGATGTCTGCCGCGA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 938>:

GNMQE49TF gnm_938

40 CCTAAGGCACATGTCAATATCCCCATTCGATAGGTGAGGACACTGAGGTTCAAGGAGGGG
AGACATCTTGCTCCTGGACACCTCAGCTGGGGAGGAAGGCAGTGGCGATCATCTTAGGA
ATCTCCGACCGCCATGGGCTCCTGCTCTGTGCACCCTCAGGAGCTTACGGTCTGGTTACA
AAAATGCCATCTGCCTATGCTGAATTCTAGGCTTATGAAGATCCAAGACATATTCTTGAA
AATCCATATTTTCATGCATTGTAATCTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 939>:

GNMQE84TF gnm_939

5 GAACATACCAATTTCGAAAACATCAATAACTCAAAAAAGATTTCTTTTATGATCAAGAAT
ATACCGAAGGTTACCTAGTTGGCTTCGCCCCGAGGTTAGGGGTTGCAAAAAGAAATGGGG
AGCAGCTGTTACAACAGCCAGTTTTCGCCGTATTTACGGCAGGTGTTAATAAATTTTCAT
GATATTTTTCCTTCAAAAAGTGTTCGGCGGTAATGGATGGAGCGTTTTTCAGACGACCGCC
10 GAACATCCGAAAATCAGTCTTTCAAAAATCCGAATACGACAAATTCGTATTGGTTGCCGA
TTTCTTCCAAACCTGCGTTAATCGCTTCTTCGAAGTCGTAGAAATAATCGGCATTGGTGA
TTAATTGGTATGTCCGATGTCGCCCGTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 940>:

GNMQF69TR gnm_940

15 CAGCATCATCGACAATAATGCTACAAGTGTGCAGGGTTTCGTTTTGTGCGGCGGTTTGGG
GCATTGCATTTCATGGTCATTTTCTGATTCTGTCTGTGTTGCCGAATCGGGCGACCTGT
GTGAAGGTAACAAAAAGCCGCCCGTTTTTCGAGCGGCCTGTTTTGCGTATGGGATGGAT
TTCAAGCAAGCGCAAAAAGTACCGCACGTCTGTGTGGTACCAATAGCAATAAGCGGTTG
TAAATTTTTTGCCTTGCATGATGAAATGCCGTCTGAAGATAAAAATATTGGGGAGATTCT
20 AAATCAAACGCTGCCGCGCCTCAAGCATTATTCGAAATTTTTTGTATTTTCATCTAT
CCGATTGAAATATTTTCGTTTATTTTACCCTGCCCCGATATTGTCGGCAAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 941>:

GNMQH20TR gnm_941

25 CGGATTCCCGCTGCGCGGGAATGACGAnCTCTCCGCATCTGATTTTGGACCTCTTGAC
GCGATTTGCTGCATTTTGAAGTGCCACCAAGATAATCATAGTAAAAAATCGTCCATCA
GCTGTTGGCTGATGTTGAGAATATTGATTTGGTTTTCCGCCAAAATTTGGAAACATCGT
ACACGATGCCGACGCGGTCTTTACCGATGACGGTGATGACTGAATTGTTACAGGCTTAC
TCCTTGCAGATATCCGTTAAAGTCCGAAATTATACCACCGTTGGATTTGAAGAAATATT
30 GTCAACAATATATACATACAAAATGCCGTCTGAACTATTTTCAGACAGCATCAAGATTCA
GGGTTTCGATTAAATAACCATCCTTATCCCACTGGGTTTTCTGACCAACTGTGCATCCTG
ATAAACAGCTTCGCTCTTTTTAGAACCATCTTCATACCACTCCAAAACCACCCCGTTGCG
TTGATGGTGGCGGATAGACAGTTCCGAGAGTAATCGGCCGCTTTTCATCCCAAGTCAGAAT
TTTGGCAGGCTCATCGTTGACCATAACCATTTCCGTCTTGATACTGCCGTCGGCATACCA
35 TTGCTTTTCATACGCGGTTTGCTTATTTTGCTTAACTGGATTTGCTTTCCTTGCCGCC
GTTA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 942>:

GNMQL93TF gnm_942

40 CCTACAAACCCGCGGCCATTCACTCGCAGACTTGGCTAAGTCGGATATTGAAAATCGAC
AGCCGAATTTACAGGGCCGCGTGGGACGAAGGTTTGAAGGCTATGCCCGCTGCGCTT
CATCGTCAACGCCTTCACGCGGATGCGCGCCCTGACCTTTAAAAACGAAGTGGATTTCGA
CTACAAATCCACAGTGAAGAAAAATGCCGCTTACCTGCGCCCGTGGTTCAAAGCCCCCG
ACCGGCAAAACCTCGACCGCACCATCATCTTCGGACACTGGTCCTCGCTGGGCTACACGA

ATGCCGACAACGTCATCTCGCTGGACACCGGCGCGCGGCAAATGCTTCCGAAACAGCTGT
TAAAAATAATGCATTAGATATTATTTGGGATATTGGCAACCTCGTATGGGACGGCGGTAA
ATGGATTTACGCCAAATCTATTGGCGATAAGCAGATGGCTCGAGAAGCGGCGATTGATTT
TGGTGTGGATGCCGCCGAGCTGCCGTTCCCTTTGTTC

5

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 943>:

gnm_943

10

AGCGGGAAGGTTTAAATAGTTAGGACGCCGGTCCAGAAGTAGTTACTACCCAAAGAAAGT
GCAACAGTCTATCGGCTGAGCTGCTTCGTGTGGAAGACGCAATGGGGTCTAAACTCACAA
TTGAAGTCGTGGACGTTGGCCCATTTGGTACGGCAGGGGAGTGCCTCGCAGGTGACGAAG
GCGTACCGCAAAGCGCGTCGGAGGCACTAGAAGCGTGAACGCCGATACGAGCAGTGACAA
AGTGGGCGAAAGTTTGTCTGTTGAAAGTTTAAAGCCCTTCGTGTAATGCCTACTGGTGC
AkGGCGAGCTGGTTTTCAAGGTGAGGTAGAAACGTGCAGCTGACGGGAAATAGGCCAACAA
CCTTCGCATCCGACCTAAACGTGACGCGGGGATGGAGAAGGCCAGGCCGGTAAGTCGCCG
15 GAACAGTCCGCCAAGTTGGCAGGCGGAAGATCCAGGTAAACTTGGGCTCCTCAATATT
GAGAAGCGATGATGAGCGCTCATGGATATGAAGTAATTGACATTATGTCCTTAGGAAAAG
TTATCAAGTCCTAGCCGAACCTGAATTGCATTGTATTGATATAGGCGGGTAGGACGAG
AACCTCAAGGTGTCGAGAGAATCTAGG

20

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 944>:

GNMQM32TR gnm_944

25

CTATCCGAACCGCTGCCGCCCTCCAAGTAATCATTACCGGCACCGCCGATCAGAGTGTCTG
TTACCGTCTTCGCCGGCTGATGTGTACCAAACCGTCTTTGCCCGGCATCACGCTGACAAT
CGCGCCGACATTGTTATCGAGGATTTTCACCACAGTGCCTTCGTACACTTTGCCACTTC
CACTTCGGCAGTAATCTGCTCGATGCGTTTTTTCGCCGCATCGCCGGCTTCTTGAGTGGT
TGCGGCAATGGTAATCGTACCGTCTTCGGCAATATTGATTTCCGTACCGGTTTCAGCGGT
AATCGAACGGATGGTTTCACCGCCCTTACCGATAACTTCGCGGATTTTGTCTTGTTGAT
TTTCATCGTGAACAAGCGTGCGCGGTGTGCGGACAGCTCTGCGGGCCCGCAACGGCGGC
TTTCATCTGATCCAAGATGTGCAGACGCGCTTCTTTGGCCTGTGCCAAAGCGATTTCAT
30 AATTTCTTTGGTAATGCCTTGGATTTTGATGTCCATTGACGCGCGGTAAACGCTTCGGT
CGTACCGGCCAGTTAAAGTCCATATCGCCCAAGTGGTCTTCGTGCGCCAAAATGTCAGT
CAGGACGGCAAATTTGTTGCCTTCCAAATCAGACCCATCGC

30

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 945>:

GNMQN35R gnm_945

GCCTCGCCTTGCCGTAATTTGTACTGTCTGCGGCTTCGTGCGCTTGTCTGATTTTGG
TTAATCCACTATAAAAGAGGGCGTCTGAAAAACATTTTCAGACGGGCTTGTATTATCAA
TCAATTAGTCTTTCAACTTTGGCAACTGATTTTAACTTTTGCCATTTTGCCCTTCCAAT
TCCGCCAAATCGGGTTGCCTTTTCCCCCAAATTCAGGGGGTTTTTC

40

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 946>:

GNMQN72TR gnm_946

AAACGTCCTACACATCCTTTTAGTGCAATTCGCTTAAATTTGTTAAACTTGGTAGGGCC

CTTATCTTCGAAAAATTACCTCTTGTTAATATGTTGTGATTGTTGTGTTTCGACTGAAA
TTGCGCCTTAGTAACAAAAAATTGTTCCCTTGTTAAATGGCTGGGTGTGTTCCGTGTTAAG
GCGTGGACGTAGTCCAGGTTGCTCGAAAAGCTGGCTAGTGTGACCCGTGGTCTAAATTGT
AAACTGTTCCGTAATAAACGCCCCTGTTGCCCCTGACACAGGGTGGGCCGATATGACG
5 ACCTTTACCTTTCCCTAGATGGTACTGCGCTGAATTATGAATTGCGCGTAAACCTG
ATTTGTGTGTTTAACTTGTGTACCCCTTGTGTTGCCCTAAGGGTGGGTGGGTGCGACG
CTGGACGTGTGTATAAATGTACTGGGGTGCCTGAGTGTGATGGCCATGGGAATTGTGTTG
TCGTTTGCTTTAACTTTATATGTGTTGCCCTGGGTAGGTGTGTTAACATGGTCCTG
ATTAAACGCTGGCCCTGGGGTGTGGAAGTAGTATGTCTGGACC

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 947>:

GNMQO54TRB gnm_947

GGGTGCATGCTTAAGAAAATTATTGTTACTAGTGTGATTAAGATTAGGTGGAACCCGCTG
ACGGGGGTGATCCGTGAGGTGCCGTTTAGCCGTAGGGTCCCAAACAGGTGAGTTAAGAC
15 GTGTTGGCAGTAAGATTGGACAGGACGAGGAACGCTTAGCCGTGTTTGCAGGTTGCCT
ATATTTCTTACCCGTTGGCGCAGGCCAAAAATAACAATAAAGTGGTAAGGACGATTAAG
GCGTGGACAAAGGCGGTGAACTGGAACCTCACATTTCGCAAATTACCCCGGTGAAAACA
GTGGCTAACGAGGTGAAGTTCGTGACGTTAACGTTTAAATAGTTACGTGCCGTGCTTT
ACGCCCCCTCTCCGGACCGGAATAACACGAATGGCACCCTGGCGCTGCTAAAAACC
20 CTATCGTGGGCCCCGGCGTGGACAATGCCACAACACGTTGACACCACCCCTAATTATTC
GCCCGCTGTTTCGACGTCCCTAGATGGTACGCTTTCTTACCCTCAAAGGAAAGCTACGA
GTCCTAAATTGACGTTGAACTGTAACTTCTATTACGTGTTTGACCGGTGAAACCC
GTTGTTAAGTCCGGCTCGAA

25

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 948>:

GNMQP31TR gnm_948

GCTGTAAATGTTCAAACACTACGCCGTCCACGATTTTGCCGAGTTTTTGGAGCTGTACGG
CATGCCCATCCGTATCGGCAAATACGGCGCGGGCGCAACCAAAGAGGAAAAAACACCCCT
GCTTCGAGCGGTGGCGGAAATCGGTGCGCGGGCGTGGGCGGTGAGGCTTTCGCCGTGTGC
30 CAGCAGCTGGCGGTTTCGCCTAATTTTTCGCGCCCTGTTCCGAACTGAATCAGGCT
GGAGCGTTTTTGGAAATCATATGTCCCAAAGGCGAGGAAAGCGGGCGGTTCGGCTGGT
GGGCAACACATGGTTTGGACCGGCGCAGTAGTCGCCGAGGCTTTCGCCGTGTAGCGTCC
CATGAAAATCGACCGGCGTGGCGGATTTTTTCGCCCATTCCTGCGGGTTTTCGACTGA
CAGTTCCAAGTGTTCGGGGGAAATGTAGTTGGCGATTTCGCAAGCTTCGTCCAAGTCTTT
35 GCGGAGTATCATCGCGCCCTGTTGCCGAGCGAGGCTTCGATGAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 949>:

GNMQP64TR gnm_949

ACAAGAAGCTGGTAGCTCCACCGCGGTGGCGCCGCTCTAGAACTAGTGGATCCCCCGGG
40 CTGCATGAATTGGCAGAGCTCGTGCCGAATTCGGCACGAGCGACTGCATTGGGAAGATC
AGTTTTCTGCCATCCAGGCTGCTCCCTCCTCAGCAACTCATTCCACAGATCTTCCGA
GACAGGACGGATATCCAGTGCCTTATCCCATGTGCCATTGACCAGGATCCTTACTTTAGA
ATGACAAGGGACGTGCGCCCCAGGATCGGCTATCCTAAACCAGCCCTGTTGCACTCCACC
TTCATCCAGCCCTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 950>:

GNMQP64TF gnm_950

5 TGGGTACCCGGCCCCCCTCGAAGAAGAAGGTCAGGTACATGAAAGACACGTCCACATCA
CAGTTGCCCCCAAACCTGCCTGTGCTCCTCGATGGTGTCTCTCCCTCCAGAAAACGCATGC
TTATTGACCTTGGTTTTGATCTGCTTGGCCGTGTGCGTGAGGAAGATGGCGGAGTTGGGG
TCGCTGGGACTCATTTTGGTCTGGGCGACCTGCATGGCTGGGAAGAAGGTGGAGTGCAAC
ACGGCTGGTTTACGATACCCGATCCTGTGGGCGACGTGCGTTGTCATTCTAAAGTTAAGA
10 TCCTGGTCAATGGCACATGGGATAAGGCACTGGATATCCGTCCTGTCTCGGAAGATCTGT
GGGAATAGATTGCTGAATGATGGAGCATCCTGTATGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 951>:

GNMQR24R gnm_951

15 CTTGCCCCGAAAAACGTGGCGTGTGCACCCGTGTATACACAACCTACCCCGTAAAAAACCT
AGTGAGTTAGCATCATATTGCTGCCATTTTTCACGGTCTTTCCCTAAATAAGCAGTAAAG
GCTTTTTCTCCCGACGGCAGGAGCTTGGCGATAAAATAGGCGAAAAGGCAGAAACACTT
TGATAACGTTCTTGATTCCGCGAGCGCAATACCAATGCGCCGTGTCCGCCCATTGAATGT
CCCATAATGGAACGTTTGCCGTTGGTAGGAAAGTGTTTCTCAATCAGACGGGGTAGCTCG
20 TTCAAAATGTAATCATACATTTGATAATTGCGCCGCCAAGGCTGTTCCGGTCGCATTCAA
TAAAGCCTGCACTCTGTCTAAATCGTAAGCATCATCGTTCGGCACTTGCTCTCCGCGA
GGGCTCGTATCCGGGGCCATCACAATTACTTGATGTTCTGCCGCGATAACGCTGAAAGCTG
ACTTGGTAATGCAATTTTGTTCGCTACACGTCAAGCCGGAAGCCAATAATCACACCAA
GCGGTCGATTTTCTGGATTATCT

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 952>:

gnm_952

GGCTGAAATCATGCAGGACGGGTAATCGGCGGCTTTGACGGCTTCTGCCCAAGCCACCA
AGGATTCATCGGTGTGCGACAGCCGCCATACGTCCATATTTCGGAATCAGGCGCAGGGTAG
30 CGGTTTGCTCAATCGGTTGATGGGTGCGGGCCGTCTTCGCCCAACCGATGGAATCGTGGG
TAAACACAAATACAGGGTTGATTTTCATCAAC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 953>:

GNMQU51TRB gnm_953

35 CTGTGGTGTGGGTGGGACGTTTCGTTCCCTTGGACCCAGAGGCAAATGACCCCTGTTATCT
TGTTTTCCCGTCCCTGGTATCCGTTTATTAGATAAACGTGGGTAGTATGCTTTTGCAGTCC
CCGTGCCTGTCCCGGTCCTGTTTGGACGGGACCGACGTGCCGTGGGGAAACCGACGGGG
TTGGGGATGAGGATGCCGGTGTGTAGGCCGTTGAAGTGCTTTTACCTGCTGGTGGTGATC
CCGTATAGGCAGCCTAATGTGGTCCCGGATGTGTGAAGTTGTTTTAGCAGGTCCCGGGC
GCCCTGTTGCGGTCCCTGTTGATGAAGACGATGGATGTGCTGGGTGATCGTCTAGTAGT
40 GGAATAGGGTGTGGGCTAGTTTTACAGGCGTGATGGCGCCGACGTGGCACCGGCCGATT
TACCTGGTGATGGCCCGGAACTTAGTGGTGAGAGGGTGCAAAAACAGTTGGTGTAGCGG
ATGACGTTGCTTAGCCCGTTCGGTGCCTGGTAACGGCGGTGGTGAACGCCTAAAC
CTCCCCCTCCTTGTTGCAACAAGGCTAAAGTAGACGGTGAACGGCCTGGGGCACTTGGTC

CTGATAACTGTGCTACATATCCCCC

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 954>:

GNMQU68TRB gnm_954

5 TTTGATAAGGAACCTGTCTATTCAGGATTGCCACAGCCATGGTTGTTGCCCATCGGGT
CCTGACTTGACGTCTCTATACTCCTAACCAATTCCTTAGTATTGGGTAGGTGCTATATTT
CACATGCTTATCCCTGCGCCAGTAGAGCGTCGCGCCCCAACAAATAGCTGTAGTTATTC
ACCTCTCGTGATTCTTGGGGTCCATGGAGTAAGCTTCCAATCCAGAGGGTACATTCCT
10 CTTGAAGCCATGGCACTAACCCGTTGAGCCTTCTCTCGAGCCTCTCTAAGTGTCCA
GAACCTCTACTTCGTTTATTTCGGCTGGCCCGTGGCATGGCCTGACCTAAATCGAAGTCC
AGCGGTCCCCTTCGGAAGTGGCGCACTGGCCGTCCTGCGCTTGACAGATATCTGCTGCTAT
CCTCTGGCGCCAAGAAGATTGGACCCGTTCAAGCTCCTTATTCATTGGTCCAAATAAGT
CACCTTAATAGTCCGTTAATTCATTCCTCTTGCTTTTATACTGTACCCGAACCTAAGCAT
15 AGGAACACCAATTCGCCCTTACTGATCATGTACCCTCGTTCTGTTCCAGGGGTGATCTA
TTTCATGTTGACGAAT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 955>:

GNMQU88TRB gnm_955

20 CGTGTGTTGCTGGCTTGACCTCGTTGGAATATAAGTTGTACCATTGACGGGTGCAGGTA
TGTTGGAAGATTCTGCGCATGGTGCGGTATATGGTACTGACACGCCTGATCGTGCGACGT
TTATTTGTAACGTATGTAATGGTCGGTCGCCCATTGCCCCTGGTGACCCGAAAATAAAA
ATGTTAAATATAAGTCTGATAAGTGCTTGACAGATGAAAGTCGTATTTCGTCATGTTTCGTT
AAAATCCTAGTTGTGTTTCATTCTGTTACTCTGTTATTGTTGGTGAACTCCGGGTGAT
25 AGCCGAATATTACTTATAACTCGTACCCTCATTAGCTACCACGGTGGAACGTGTGAAG
TTGCTGAATAAGGTAAACCCGTTGATCGGTAGGTGTGACCTTATGAAAATTGTGTATGTG
GTATAGATCGACCTTTTCGTACGTTGCTCGAAGTTGTCCTAGATGGTACCCCGTTGTCCC
ATTTTCAATTTGTATCACCCCTAGAAATTGACTACGTCCTTACCTCCCTTAGAATTTCTTT
CCCTTCACATGTAATAAAATTGCATTGTTGCCCGTCGCCGAATTCTGGTATGTTTGATG
30 TGTTGATTG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 956>:

GNMQX55TF gnm_956

35 AGGATCCCCACGAACACAAATGACCGTACAGACCAAGACAAAAGGTTTGGCGTGGCAAG
AAAAACCGCTATCCGACAACGAACGTCTGAAAACCGAAAGCAATTTTTACGCGGCACGA
TTTTGGACGATTTGAAAGACCCGCTCACGGGCGGCTTCAAAGGCGACAACCTCCAACCTCA
TCCGCTTCCACGGTATGTATGAGCAGGACGACCGCGACATCCGCGCCGAACGCGCCGAGG
CAAACTCGAGCCCTTGAATTTATGCTTTTGGCTGCCGGCTGCCGGGCGGGATCATCA
AACCCTCCCAATGGATAGAACTGGACAAATTTGCCCGGGAAACAGTCATTACCGCTCCA
TCCGGCTGACCAACCGGCAACCTTCCAATTTACGGGGTGCCGAAAGCCAAGTTGCAGA
40 CGATGCAACGCCTCCTGCACAACTGGGTT

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 957>:

GNMQY03TR gnm_957

CCTACTCTCCCTAAGCAACGAGATGAAACAGCGTATCGACTCCCTGCCGGTTGAATTTTC
CGAAAAAACGCGACGTAACCAGCATCAACATATATAAGAACAGCACAACCTAGCATCAATA
CATCAGGCAACGAAATGCAGAAATATGCACCTAATGGTGTGTTGGATATCTGTTGTTTGTG
5 TGCTGTAGTAATTCATCTTTCTGTGTTTACAGTTTAGCAGTTGTACAGTTTATAGTAA
TGTTTAAACAATGACTGATTTATTTTAAATGCAGATATTGTGAGGATAAACATGGCCAA
AGCCCTTTTCAGTAACATTTCTGATTTTTTAGCGAGCCTTCTCATTTCCCCAGCGAGATCG
GTACTGGTACCTGTACTTTGGCCGCCGATATGCTTAAGTTTCAGTAACCTTAGCGCGCAA
TCCAGTAACCTTACGTTACGT

10

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 958>:

GNMRB37TF gnm_958

CACCAACCTATGTGTCGTCCTGATCTGGGAGGAGTTGTCCCTCCCAAACAAATCTGATTC
TACCGCCCCGAAGAGCGGGGTTCAACCGACAAGGAAGATTGATGAACAATATGTTTGCC
15 GCAAAATGTCCAACTGGTTTATACCGCTTCGACCATCTGATTCCCTGTGCGAGATG
GAGGAGTTTGACCGCTGATTCTGCTGATACGCAAACTGTATCAAATATTGGACGGGCAA
CATATCCTCTCCAGAGTAACGGTTTGCCCTTACCACCAAACCGGCGCGACCTGATTGCC
TTGGATAAAGCGGCTGCCGGTTGCGATTTCGGCAATGTTGCGCGCCCAACGTTGGCTCGGA
CGACATGGTCGCGGCCATAAATTTCGGCGGGGTAGTGCGCTTTAAGCCATGCGGCTCTGGTA
20 GGAAATCAGGGCGTAnGCGGCGCGGTGGGATTTGTTGAAACCGTAGCCGGCGAATTTTTC
CATGTAGTTGAAGATTTTCGTCGGATTTTTTCGCGCGAAATGCCTTGTTTTGCGCGCCTTC
GGCGAAGATTTTCGCGGTGTTTCACCATTTCTTCGGGTTTTTCTTACCCATGGCGCGACG
CAGCAGGTCCGCGCCCCGCCGAACGAGTAACCGCCGGATAATTGCGCCGCCTGCA

25 The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 959>:

GNMRF35TRB gnm_959

TATCGCATGTAAAATAGTAAACAAAGTAAAGTTTGGGCGGTGGAACCGGCAGATGTGTC
AGTCCTAGGCGTCAGCACTTCTATGGGCGCGGAAGCCTGAGCTCCTCTTTGGGTATTA
CTAAACGTCCCGTCCCACCTAACACCCAGACCGTTTGGGCGGTGGAACCGGCAGATGTG
30 TTAGTCCTAGGCGTCGCGCACTTCTACGGGCGCGGAAGCCTGAGCTCCTCTTTGGGTATTA
AACAACAAACCACTTTGACCGGGACAACCCCTTGTTACCAGAGAGGCGGACGAGCGGCCCA
AGCTGTATGTTTCGGAAGTGCGCACATGCCAACAGTGCACTGAGGGCCTGAACCTTTCCTT
CTCTCGTTAAACATAAACTTTAAATCCCCATGGCCCGGGACCCCCACCACTAAATAAC
AACCCTACCGGGAATTTGCCACCGCTCACAACCTGCTACTAATTGTCCATAATCACTTG
35 CCATTGCCCCCGCGGCACGCCCCGTGGCACGCCCCATTTCTCCTTCTAGTTCGCAAGGA
TCTAAAAGGTGCACCTTCCTAAATGGTACCGCTGATACGTCGTTGGGAAGTTGAATTG
ACATTGAAATGTGATGGGGTGACACATTGTTCGGAACGCGTGG

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 960>:

GNMRH76TR gnm_960

CATGTTGGTGTTCATTAGCCCTTTCTCCCAAGAATGGTAAGGACGACAGGCAACGGA
CGGTAAACGAAGAGCTTGAAGAGTTTCGTTCAACTCAATCGAATCCGCCCCGTTTCAAC
ACCAACCCCTGTCTGCCGGAATAGATGTAGCCGTGCCGCGCCAGCTTTTCCAAAAGCTCG
CCCAACTCGTCGTAGCCCATATTGATATGCCGTCTGAACTCCTGAACAGGCAAGGCTTTG
45 CCTTCTTTTTGCGCCGCATCCAGAAGCAGGATTTTCAACACGTCGTCAAACCGTCCG
CGCGAGTCGAAGCCCCTGCGGAACGCTTCTCCTGCCAGTAGGAGAGTGAAGAAGTCAGC

CGCGAGTCGAAGCCCCCTGCGGAACGCTTCTCCCTGCCAGTAGGAGAGTGAAGAAGTCAGC
ACCGCGCCGCCCAAGACCAGCGTCCA

The following partial DNA sequence was identified in *N. meningitidis* <SEQ ID 961>:

5 **GNMRI44TR gnm_961**

TAAGGCAAAAACAAGCGTTTTTCGTCATTTTGAGGCGTGTGGATTATTCCTTAGGTATTTT
CGGGCCGGAGACCAACGAGGTGGCGGGTGTCTCGGTACGTCCGGAGACCAAAATAACTT
TGCCAGGGATGTTGGTTTCGGCGGTCAAAAAAGTAGCGTCTTAATGTTTTCCATTAAAA
CAAATGTCGGTGAGGATGCGTTGTTTAAACGATTGTCATGGCGTTGTGCAGTTGCAGC
10 AGGTAAACGGTCGGGCGGGCGAGTCCGATGAGGACGCGTTCGGCGGTGGGGTGGATGCGG
AAGCGGTGCATCAGTGCCTTGTGTTTTGGAGCCGGCCGTTTCAATTTCCAGTTGCCGATG
ACCCATTTTTGATCCACATTCCGATTGGCGATACATCTTTTTGCTCCGTGTCGTGTT
TTTTTGTCTGCCGCGTGTGGCGCGGTGCAACGTGAAGTTTAGTGGATATGCGGCGGGTTC
GCAACTTGAAGCGGCCGGCCGGCGGTTTGAATGTTGTTTCGGGCAGGCTGTTTTATAA
15 TGGCCGCCTGATATGTATGCAACTATAGGAGATGTGATGCACGCGCTTCATTTTTCGGCT
TCGGACAAGCCGCGCTTTATCGGGAGGTGTTGCCGCAGATTGAGTCTGTGGTGGCTGA

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